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Gleanings in Bee Culture

Come and Look at My Bees

Photographed by Edward F. Bigelow

Gleanings in Bee Culture

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EDITORIALS

Clover Prospects for this Season

Reports are somewhat conflicting. Some say that clover looks well, while others say the weather has been too dry. In this locality we have not had quite enough rain to insure a good crop of clover honey. The spring has been favorable for building up colonies.

Late California Rains

Just as we go to press the following report has been received:

The California situation has improved with a rain ranging from one-quarter of an inch to one inch and some places more than that in the higher mountains. This will put an altogether different complexion on the prospects of some localities, which had begun to dry out with hot winds. The weather for the last ten days has been rather cool for the production of orange honey, though several people report that they are taking out honey in liberal quantities.

Idaho Not Without Foul-brood Legislation after all

Joseph J. Anderson, of Salem, Idaho, in one of his recent letters, in referring to the fact of the governor having vetoed their foul-brood bill, says the beekeepers of the state are not without protection after all, but they needed something better. Fortunately they have an appropriation of $3000 to put the *old* law they have into effect.

Big Quadruple Winter Cases vs. Individual Double-walled Packed Hives

The past winter's experience does not clearly show that these big winter cases are ahead of the double-walled so-called chaff hives. In one yard the big ones showed a marked superiority over the individual double hives. In another yard there is no appreciable difference. The fact that we had so much aster honey last fall has complicated the results, and it is therefore a little difficult to make any definite assertion. Where there are good stores and a fair colony, big winter cases are ahead in that they have much more brood than the individual double-walled hives.

How the Bees over the Country have Wintered

Reports thus far received from over the country show remarkably good wintering. There are a few reports, where bees had aster stores, showing that there was from 25 to 50 per cent loss, and hives badly spotted with dysentery. The losses seem to be largely in the aster districts of northern Ohio than anywhere else. Our own loss will run about 35 per cent among colonies supplied with aster stores. There was no appreciable loss among bees having good stores.

We shall be glad to get reports from our subscribers as to how bees have wintered in their respective localities; and if there was any considerable loss, whether the spring has been favorable enough to compensate in part for this loss. This information will be very interesting and valuable, as it will have a bearing on the price of honey this coming season.

The Folly of Spreading Brood at this Time of the Year

Very often when a premature warm spell of weather comes on, lasting for a couple of weeks, the temptation is very strong to hasten brood-rearing, either by unwise feeding when the bees have plenty of stores or by spreading brood. The novice is very apt to conclude that the bees will increase faster if he puts a frame of empty comb down in the center of the brood-nest; and if the warm weather continues, with no cool nights, the practice may do no harm, and it may do some good. But as a general thing old Dame Nature has a fashion of bringing on one extreme after another. A

warm or hot spell out of season is quite likely to be followed by a chilly or a cold spell of weather. It is then that the practice of spreading brood results in almost irreparable damage to the colony. While the bees may recover, the split brood-nest causes a large amount of brood to chill and die; and the result is very much worse than if the bees had been left to their own sweet will.

Luther Burbank and his Recognition of the Honeybee as a Pollinating Agent

QUITE incidentally we have learned, as we approached the home of Luther Burbank, the plant wizard of the world, that in the making of some of his new creations he is in the habit of getting up at 4 o'clock every morning, or before the bees get out to modify the results. He has often spoken of the bees as a pollinating agent; and did he not recognize their power to modify plant life, he would not get up so early in the morning to mingle the pollen in an artificial way in order that he may secure some creations that nature, if left undisturbed, would not produce. Indeed, we are told he keeps bees for the very express purpose of helping him to bring out some of his wonderful works in the plant world.

How do Bees Smell?

JUST as the study of human traits and faculties is based upon accurate researches in the senses, the study of the psychology of the honeybee should begin with investigations of the sense organs of bees. Unless their anatomy and functions have been carefully determined, we can never reach a clear understanding of bee behavior. The habits may be observed, but the reason back of them can never be grasped by one unfamiliar with the way they receive their impressions of the outside world.

If any of the three senses of sight, sound, and touch can be picked out as more fundamental in man than another, it is sight. With the bee the sense of smell is probably the most important within the darkness of the hive but outside it is of secondary importance. The seat of this sense, scientists hitherto have been placing in the antennæ, one writer even claiming to have located the segments in which the power of detecting enemies arises.

According to N. E. McIndoo, Ph.D., of the U. S. Department of Entomology, the seat of the olfactory sense is not in the antennæ but in certain olfactory pores, at the base of the wing and the joint of the leg. In a noteworthy contribution to the psychology of hymenoptera entitled "The Olfactory Sense of the Honeybee," he details an extensive series of experiments carried on with normal and mutilated bees to discover wherein lies their appreciation of odors. Bees deprived of antennæ were abnormal in every way. There was nothing in his experiment to indicate that the antennæ play the slightest part in smell. On the other hand closing certain of these pores with varnish increased twelve times the length of time the bee ordinarily took to react to strong odors. From these results he summarizes that the antennæ can no longer be regarded as the seat of the sense of smell in insects.

In a criticism in the *American Bee Journal,* Dr. Bruennich believes that these organs which Mr. McIndoo featured are merely protective against injurious gases, and that the antennæ are the seat of the senses detecting the presence of honey and of enemies.

Difference in Honey Production between Two Apiaries Two or Three Miles Apart, and Why

IT is a well-known fact that there may be a great difference in the yield of honey between different outyards. One yard, for example, may yield 100 lbs. of surplus clover, and another, not two miles away, will furnish almost nothing. Sometimes the difference is attributed to the soil; but when the two yards have yielded about the same amount in previous years, we must account for it on a different basis.

Just a few days ago two farmers near us complained of weather conditions on the same day. One had had so much rain that the ground was so thoroughly soaked he could not cultivate, and the other, not more than a mile and a half away, said his ground was so dry that he feared that his crops would be short. Suppose, for example, both men had been growing alsike and white clover. It is easy to see why in the one case bees on one farm would get a crop of honey while those on the other farm would get nothing. These local showers have a way of thoroughly wetting down one farm and leaving the other farm high and dry. Then, the failure of one beeyard and a plentiful yield of honey in another can often be explained by the amount of moisture in the soil.

There is another cause: There will be winter killing of clover on one farm where

the land is low and wet, where on another farm a mile or two away on high ground that is comparatively dry, there will be no winter killing. On the latter farm bees may do well; on the former there might be almost a failure of honey.

The A B C of Composition

THE editors of GLEANINGS have printed a small folder for free distribution entitled "Suggestions to Contributors," designed to furnish contributors and would-be contributors a few hints on the composition and general get-up of their articles. So much ignorance seems to exist regarding the manner in which a manuscript should be prepared for the printer that these instructions should be welcomed by the writers for GLEANINGS. While the thought is the main thing, it is true, nevertheless, that a well-written article commands a higher price than one that is carelessly prepared.

The college professor who reads in this circular that all sentences should begin with a capital letter should not allow his feelings to be hurt. The little instruction is given in elementaries because elementary reminders are just what a great many writers need.

If the contributors follow these instructions the editors will be happy, typesetters will bless them, and they themselves in the end will be gratified at the improvement.

The Massachusetts State Board of Agriculture and its Advice to the Fruit-growers on Spraying

THE Massachusetts State Board of Agriculture is sending out a large colored poster in bold display type, containing a set of instructions to the fruit-growers of Massachusetts. At the very beginning is a bold headline, "Are you spraying at the right time, or are you spraying at all?" Another line says, "Are you killing the bees that are setting the fruit for you?" Down below this there are plain and specific instructions on when and what to spray with. It mikes very emphatic the fact that the trees should not be sprayed while in bloom, and then adds, "If the nectar and pollen they (the bees) are after are poisoned at the wrong time (during blossoming) they are liable to be poisoned, and less fruit will be set." Then in black letters appears the following: "Never allow your trees to be sprayed while the large pink or white blossoms are still on them, for the job will not be as well done. Less fruit will be set, and many bees may be killed." This is not from a beekeeper, but from the State Nursery Inspector, H. T. Fernald.

This poster is one of the best things we have seen. It is brief and to the point, and cannot help being of great benefit to fruit-growers and beekeepers alike. Other states would do well to send for a copy and get out one similar to it.

A New Department for Southern Beekeepers

GRACE ALLEN

There have been many requests for a department in GLEANINGS representing the southeastern part of the country. The beekeepers have felt so "left out" that they finally brought their requests to a focus—with the result that "The Dixie Bee" starts with this number, and will appear in the first number each month.

Our readers who have been enjoying the delightful poems by Grace Allen will be glad to know that she has consented to edit this new department. Mrs. Allen is hardly a beginner, but she does not wish to pose as an expert—just yet. Her department will be of special interest to the beekeepers in the great Southeast, to the beginners in all parts of the country, and to all who love good poetry. Besides being an enthusiastic beekeeper herself, she is vice-president of the Tennessee Beekeepers' Association and will be in close touch with a large number of prominent honey-producers.

Aster Stores in and about Medina and Elsewhere

IN this issue, page 352, J. L. Byer reports good wintering on aster stores at one of his yards. In this locality the colonies that have had access to these kinds of stores (or what seemed to be the same) showed up dysentery and spring dwindling. Some colonies died outright, and many are weak. When the colonies had good stores, free from aster, there was universally good wintering.

We hardly know how to account for the difference in the asters of Canada and those in the vicinity of Medina, unless there is some other weed that grows in Medina Co. that does not grow in the vicinity of the

Byer bees. This raises the question whether aster honey was the cause of our trouble, or something else that bloomed at about the same time. As there are many different kinds of asters, there are of course several different kinds of aster honey. Some of them may be good while others are bad for wintering.

It will take further investigation before we can arrive at definite conclusions. But A. J. Halter, in whose vicinity we had a couple of yards of bees in the aster swamps of Summit Co., warned us to look out for those aster stores. We knew the general bad reputation of aster honey. Those that had the most of it were sent down to Virginia. The rest were left at Medina, with the result as already stated.

Massachusetts Apiculture

THE president of the National Beekeepers' Association, Dr. Burton N. Gates, of the Massachusetts Agricultural College, is the author of a paper on "Beekeeping in Massachusetts," which has been published as Bulletin No. 75 of the Federal Bureau of Entomology. A sketch of this nature, not attempting too much, is particularly valuable for the study of conditions in a locality, and takes its place among a number of similar highly valuable reports of state beekeeping, which, taken together, give a comprehensive view of the situation in the whole country.

Colonial apiculture had its beginning in Massachusetts as early as 1644, but we hear little of it from that time until the beginning of the last century, when what little progress it may have made all but succumbed to a series of attacks by disease. Langstroth's epoch-making invention in 1853 transformed beekeeping in this state just as in all the rest.

Dr. Gates believes Massachusetts needs "fewer but more proficient beekeepers who will undertake the work along this line." The reported average of 5½ colonies to the beekeeper is far too small; but if it were very greatly increased many would have to go out of the business on account of a lack of forage for the bees. His figures reveal the fact that half the beekeepers quit the business after about five years of the pursuit. Probably this proportion would hold general in other states.

The room for improvement is shown most strikingly in the conclusion that about one-fourth of the beekeepers still hang to the use of old box hives. With the advent of the modern professional beekeepr, with his standardized equipment and efficient methods, this figure is doubtless approaching zero as the limit.

The author reviews the phase of beekeeping most peculiar to Massachusetts. In 1909 there were at least one hundred and eighteen greenhouse cucumber-growers. Each of these used about eight colonies to an extensive crop. He believes over a thousand colonies are destroyed in this manner every year, since each colony is fully ruined after a year of use. The waste of this condition could be improved by practical beekeeping methods among the cucumber-growers, and a great deal of expense saved.

The Beekeepers of Imperial Valley, California, not "Dogs in the Manger." A Wonderful Bee Country

WE had the privilege of spending one day in the wonderful Imperial Valley of California. This valley is surrounded by miles and miles of desert and mountainous country that can never be irrigated, for the simple reason that it cannot be reached by water. In fact, the valley is a mammoth oasis of four million acres under cultivation, with two more million to follow when water can be got on to it. The soil is wonderfully productive—deep and rich; in fact, the territory has been called "the little Nile of the Western Hemisphere." We doubt if there is another spot in the world its superior. It will grow practically every thing. It is one of the most wonderful alfalfa districts in the United States; and that means it is a wonderful bee country. But, like all of these bee paradises, it has its drawbacks. It is excessively hot there in the summer time. It is already overstocked with bees and beekeepers. The alfalfa honey there is darker than the same kind of honey produced in Nevada and Colorado, and hence brings a lower price.

The fact that Imperial Valley is quite isolated by a dry stretch of forty miles all around, has enabled the beekeepers of the valley to prevent the importation of bee disease. If it is once free of European and American foul brood, there will be no danger of either of those diseases getting a foothold, providing the importation of bees can be stopped. Accordingly, taking advantage of the California county foul-brood law, the beekeepers of Imperial Valley have stopped all importation of honeybees into their county that have either had disease or which came from a locality where disease was present. The unpleasant duty and responsibility of enforcing this law fell on Mr. A. F. Wagner, foul-brood inspector of

El Centro, in the very heart of that wonderful country; and because he has enforced the law to the letter he has called down on his head the wrath of the beekeepers of other counties. Indeed, the beemen of Imperial Co. have been accused of playing the part of the dog in the manger. It is but natural that the "outsiders" should complain of unfairness. On the other hand, when one talks with the "insiders" he can see that there is some justice in their claims.

We met several prominent beekeepers of the valley and discussed this whole question. They deny that they are opposed to the importation of bees from other localities providing those bees are healthy themselves, and providing also they come from locations where there are no bee diseases. They freely acknowledged that they had stopped shipments into their valley because the bees in question came from localities where bee disease was rampant, and they insist that they will do it again. Their condition, they contend, is different from that of any other county in California in that it is surrounded either by barren mountain ranges or deserts. There is no possible chance of bee disease coming there unless it is imported by direct shipment.

Their valley is practically free of disease, although occasional cases of it crop out here and there; but through the systematic efforts of the inspector, Mr. Wagner, they are hoping to stamp it out entirely. That they could never do if they allowed indiscriminate shipments into the valley.

They admit that they have a wonderful bee country, and say that any man who desires can come into their midst and bring bees, providing those bees can show a clean bill of health, and providing it can be shown that the locality whence they come is free from disease.

Later on we shall be glad to present some photos of some of the leaders in that valley, and some of the wonderful erosion that has taken place in that country when the water broke loose and filled up the Salton Sea Basin. This was formerly a barren hot dry basin below the level of the sea. It is now, owing to a blunder of an irrigation company, a big inland sea. Hundreds of fine ranches or farms were literally washed away and a new river bed established. This "blunder" was both a blessing and a curse to the valley. Those who were not hurt do not care, and those who were have filed damage suits. When boys or men fool with a hole in a dyke or other barrier to a big water supply they should be careful what they do. In this case millions of dollars of damage was done.

Successful Co-operative Experiments

THAT the beekeeper who looks beyond the end of his nose is the man who gets the big honey production is shown by the results of experiments reported to the Ontario Provincial Apiarist. A unique policy is that of the province in sending out standard material and directions for carrying on a definite experiment, to all who desire to make the experiment and accurately report the results. While not listed as such, the whole plan is in itself an experiment to prove that the beekeeper interested in the progress of his science actually averages more than twice the efficiency of the indifferent fellow. This was shown in reports from 541 experimenters.

These 541 had an average of 28.6 colonies each and in experience varied from one year to forty. Hives of every variety were reported, but more than half were Langstroth. Pure Italian colonies nearly equaled hybrids and blacks together, a large increase over last year.

The experiments concerned prevention of natural swarming in comb and in extracted honey production by holding the colonies together, the prevention of natural swarming by manipulation of hives instead of combs, the method of spring management, special inquiries in races of bees, and the "smoke" method of queen introduction. The last proved entirely satisfactory with two-thirds of the experimenters.

Experiments for 1915 include the starvation and "smoke" plans of introducing a laying queen to a whole colony, shipping and introducing combless packages of bees, and the use of the wire-cloth bee-escape boards for removing bees from supers.

The U. S. Weather Bureau Maps; How they may Enable us to Forecast the Honey Yield, both in the East and West; What shall the Harvest be for 1915?

WE have been getting from the general Government, for some time back, at the suggestion of Dr. E. F. Phillips, of the Department of Agriculture, daily weather-maps showing the isothermal lines of temperature in every portion of the United States, the direction of the wind, and the height of the barometer. The isothermal lines are shown by red lines giving the temperature of every day of the year at 8 o'clock in the morning; and it is astonishing how the isothermal lines will move from north to south. For example, on April 20

the temperature at Portland, Me., was the same as that at Atlanta, Ga.; and the same line on the same day ran through Chicago and Kansas City, almost around to San Antonio, Texas. In other words, it was just as warm in Portland, Me., and Chicago, at 8 o'clock, April 20, as it was at Atlanta and San Antonio. On April 18, the same isothermal line of 50 degrees started from Portland, went down to Asheville, N. C., away up to Chicago, Alpena, Mich., and clear up to the northern part of Lake Superior.

The barometric changes are no less freaky. The area of precipitation or slight rains is shown by a dark shading. Very often when we get a rain at Medina we wonder if there was only a local rain, or whether it covered a large portion of the United States. By consulting these maps two days afterward we can tell exactly how far our Medina rain extended. Two weeks ago the maps showed that the April showers covered all the eastern states, the entire lake region, and extended down to a narrow line covering the territory immediately surrounding New Orleans. A few days afterward this area of precipitation kept getting smaller and smaller until it disappeared altogether.

During the last few days it has been a little cloudy, and we hoped it was going to rain, for our rheumatic bones seemed to feel that way. There was a very light sprinkle with cloudy sky. These Government maps showed that for over a week almost the entire United States was showing a high barometer—that is, no rain. In fact, the map was practically white all over, and it has been so for a couple of weeks back. (White means no precipitation.) We now know without any guesswork that there has been no rain to amount to anything in the United States for the last ten days. Already letters are coming in to show that it is getting dry. The farmers in our locality are complaining that the wheat needs rain. When wheat suffers, the clovers suffer. It is not too late yet for rains to come so that the clovers will yield a crop of honey; but we are getting near the danger-line. Unless rain comes within a few days, and that, too, over a large part of the United States, there will not be much clover honey in the United States. Already we hear of forest fires in Michigan and Pennsylvania, and these fires rarely occur unless it is getting pretty dry.

The failure or partial failure of the clover crop will have a decided tendency to boost prices on honey. The western beekeepers in the irrigated regions may well smile, for what is bad for the eastern brethren is often a good thing for the western beekeepers.

But Mr. Frank Rauchfuss, an authority on Colorado alfalfa, says there has been an insufficient supply of snow in the mountains; and when we saw him he feared that the alfalfa yield would be curtailed somewhat, if not short. In this issue our California correspondent speaks of its being a little dry in the sage region, notwithstanding the heavy rains early in the season. Our Weather Bureau maps show that there has been but very little rain in the sage districts of California during the last week or ten days. We were notified when on the western Coast that there might be ever so much rain for the sages early in the season; but unless there was a good shower just before or about the time they come into bloom the sages might fail. It is not too late at this writing, April 21, to get the needed rains in California and the central states.

Later, April 23.—Some fine rains with warm weather have come in the nick of time.

Still later.—General light rains on the 22d fell in northeastern Ohio, Indiana, Illinois, Kentucky, Tennessee, Missouri, and as far south as Alabama. There were also rains over the whole of California. Whether these were enough to help out the sages and the clovers we cannot say. There were no rains for the same period in eastern United States, comprising New England, New York, Pennsylvania, and Michigan.

April 25.—The rains have come for New York and Pennsylvania. Michigan still dry.

PROSPECTS IN THE CLOVER AREA.

In our next issue we shall be able to tell the story. The practical bearing of this whole thing is its reference to the honey market—that is to say, the Weather Bureau maps, we hope, are going to enable us to forecast the honey crop, both east and west; but it should be said that in the irrigated regions, and where high mountains are not too far away, but high enough so they hold snow the year round, the honey crop is almost a sure thing; but in order to hold snow the mountains must be somewhere about two miles high above the level of the sea. This is one reason why the Rockies and the Sierra Nevadas furnish such immense quantities of irrigation water from the melting snow for the valleys beneath. Very often there will be a severe drouth in the eastern states when the constantly melting snows of the mountains cause the valleys to blossom like the rose of Sharon.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

ANOTHER sign of laying workers may be added to those on page 312. It is to find an egg laid upon pollen.

F. GREINER, p. 333, says bait-combs result in pollen-laden sections. They don't here, friend Greiner.

G. M. DOOLITTLE'S description of a piping queen's performance, p. 312, is the best I've ever seen. But I'm surprised that he has never "heard a 'pipe' from any queen while she was on any other place than a comb." A queen often pipes in a cage with no comb.

EUGENE SECOR has had none of the poetry dried out of him yet. In a note dated March 16 he says: "Every thing here is yet asleep. No alarm has been sounded by robin or bluebird. But the bees in cellar have shaken off their winter stupor, and are fretting to frolic among fragrant flowers."

CHALON FOWLS quotes Ira D. Bartlett as saying 90 per cent fail in beekeeping, and exclaims, "O Ira!" Then he coolly reads out of the list of beekeepers all farmers keeping a few bees who have a hundred times more capital invested in their farm or stock. O Chalon! Just how many colonies should a man have before he should be called a beekeeper, anyway?

ASTER stores are blamed for winter losses. Why don't you train your bees to let asters alone? Asters are plentiful here, but my bees practically neglect them, and they came out of cellar in fine condition April 6. [It is not every year that asters yield honey; and it is not every locality where they secrete much nectar. If we had fed our bees on good sugar syrup or good honey and kept them at home last fall, instead of hauling them ten or twenty or even fifty miles to the aster swamps, we should have been better off. The asters are all right; but the stores, as a general thing, should be used for breeding, and not as a winter food. —ED.]

DENATURED sugar is of great interest to European beekeepers because of the high duty on sugar. But how much could we gain that way? I wish, however, there were a law against feeding bees any thing but deeply colored sugar, so it would show plainly if any of it should get into the surplus. [Members of the National convention at Denver thought it was wise to go slow in making recommendations to the national Government to provide for denatured sugar to be used for feeding bees. Possibly there would be no very great financial gain—especially so when sugar reaches its normal price after this senseless war is over.—ED.]

L. S. CRAWSHAW, that breezy writer of the *British Bee Journal*, p. 95, says: "Precisely what some few of us 'retrograde writers' have maintained in spite of abuse is that early queens, raised under the natural-swarming impulse, are the best." Now, that isn't a bit kind in you, L. S., to be scattering doubts and fears among my hopes and longings. Here I've been rejoiced to find now and then a colony quietly superseding its queen, with no inclination toward the swarming impulse, natural or unnatural, but bending its whole energy toward piling in the honey, and thinking that a queen resulting from such a supersedure was equal to the best, and now you would have me believe it would be still better with some "impulse." "Didn't happen to think of that sort of case?" All right; send around a small boy with an apology, and we'll be friends again. I'm heartily with you, that when, under the most favorable conditions, a colony rears queens in preparation for swarming, the queens reared under that "impulse" cannot be improved by the intermeddling of any two-legged creature so long as the young queens are reared from that same old one. But please remember that, under natural conditions, *every* queen is superseded by the bees before she dies, and that the superseding impulse is just as natural as the swarming impulse. Swarming may or may not be, but supersedure there *must* be if the colony is to continue. So when it's the regular business of old dame Nature to rear queens for superseding, wouldn't you expect a good job?

Now let me say what further I believe, and I'll be glad if you agree. Take a broad view of the field, or, rather, of the apiary. Here are 100 colonies, having all degrees of inclination toward swarming. I can leave them to their own sweet wills year after year, and each will have a queen reared under the swarming impulse. Or, remembering that however good the swarming impulse may be for queen-rearing, the less of it the better for honey-getting, I can take the matter into my own hands and rear queens from some colony with never a swarming impulse, but strong on storing. I believe I can get bigger crops by taking the latter course. I believe I have done so.

NOTES FROM CANADA

J. L. Byer, Markham, Ontario

I have just returned from visiting the north yard referred to at different times during the past winter, where the 250 colonies were winterly mainly on aster honey. The bees had no cleansing flight wintered mainly on aster honey. April 7, and, much to my surprise, every colony in normal condition last fall is alive at present, and not a spot of dysentery in the whole apiary. More particulars later.

* * *

At this date (April 12) it looks as though bees have wintered better than anticipated in my Notes for April 1. Heavy losses are reported only where little feeding was done last fall, and in some cases where natural stores were bad. Our own losses seem to be confined to two yards where about fifteen colonies have perished, and in these cases abundant stores were present, but granulated solid. The bees broke their cluster early in March, with combs solid with this poor stuff.

* * *

Mention is made on page 173 about a ten-pound pail, used for a boiler for a steam-heated knife, bursting and severely scalding the person using the knife. The warning is not out of place, as one needs to be careful. During 1913 we had a similar experience, but no one was hurt. We use a small kettle, and the top is fitted in tightly by placing a few thicknesses of cotton under the cover and then pressing it in. Once the knife became clogged, and this top acted as a safety-valve, blowing out so forcibly that it went to the roof of the building. Mrs. Byer was sprayed a little with the hot water, but received no injury.

* * *

This is the time of the year when letters come in asking about clipping queens. The subject has been debated so much that it is pretty well settled, and the verdict is apparent from the fact that about 90 per cent of the commercial beekeepers, at least, follow the practice. Just a word of warning to beginners on this question: Do not clip part of the queens in the apiary and leave the rest. Clip all of them or none. Space forbids at this time giving more reasons for this advice; but if the beginner is at all doubtful as to its wisdom, let him try the partial method; and if a bad swarming season should ensue, he will understand all about it by the end of the season.

My father left North Carolina for home April 7, and at that date the bees there were working on the soft maples. On April 8 our bees (at home) were getting pollen and nectar from the same source. This is an unusual condition indeed, as other years when father has been in the South there has been at least a month's difference in the time of bloom of south maples as compared with us in Ontario. If this has been general all over the South I would surmise that it has been a poor year to move bees down there to have them build up for increase and moved back north again later in season. I sincerely hope conditions have not been so backward in the vicinity of the Dismal Swamp. Vegetation was further advanced on the date mentioned, in the vicinity of Cincinnati, than it was twenty miles from Asheville, N. C.

* * *

Glad for the caution to shippers of queens and bees by the pound, as lately given in "Special Notices," Feb. 15. Especially should shippers of bees by the pound be careful in sending bees long distances. While many have come to Ontario in good condition, many have come otherwise, and shippers should either be able to prepare the bees so as to be sure of safe arrival, or else be prepared to make good all losses. One of the great troubles is getting quick clearance from the customs office nearest the beekeeper getting the pound packages; and from past experience, if getting any such packages I believe I would have them sent to Toronto and then make it a point to meet the shipment and bring them out the twenty miles by auto or other conveyance.

In 1913 a young man near me got quite a large shipment from a point as near as Michigan. They came to Toronto; and by reason of a lot of red tape, they actually lay there for two days. The result was a lot of dead bees; and although claims were made on the express office, up to this time not a cent has been paid to the buyer of the bees, and he just lately received a letter saying no payment would be made. For a private individual to get after an express company is out of the question, so I suppose the beekeeper will have to bear the loss.

* * *

"What a difference between the North and the South!" exclaims our friend from Texas, page 222, March 15. Yes, there is

Continued on page 355.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

There is little danger of disease from stray swarms if hived on foundation. The lapse of time before the queen can begin laying removes any likelihood of disease being carried.

* * *

Hot, dry, electric weather the past two weeks has caused beekeepers some worry. Some indications of rain are now developing, and it is to be hoped we get sufficient to keep the surface moist.

* * *

Out of all the colonies requeened last season, not one queenless colony has been found; while ten per cent of the two-year-old queens have disappeared during the winter and spring, leaving fertile-worker colonies in most instances.

* * *

Economy in bee time is really an important factor. Weeds in front of hives, an entrance too small, an alighting-board too narrow, and hives set high off the ground, allowing the wind to toy with them, all have a tendency to retard their progress.

* * *

After being free of foul brood in my apiary for five years, I have suddenly discovered a case of American. They were promptly destroyed, and I fear no further trouble. Black brood is cropping out badly in many sections, some places being extremely bad, and apparently hard to get under control.

* * *

While I was shaking combs to get the queen below an excluder, a considerable amount of nectar fell on a board which I was using in front of the hive to catch the bees as an alighting-board. It was very thin, and I supposed it would evaporate, leaving only a sticky place on the board. To my great surprise, after it had remained in the sun all day I found it to be thick heavy honey with not nearly the amount of decrease by evaporation I had expected.

* * *

Will wax-moth work on wet combs? Now you novices in the business, be careful. Here comes a man who says moth will not work on wet combs; another says they will. What are you going to do? Take a bit of advice from me. Put your combs away dry and clean, and have them in shape when needed. Wet combs catch dust and dirt, harbor filth, and will be riddled by moth just as quickly as dry ones if there is food for moth in them.

* * *

I have been trying out a new scale for buying swarms. It does not pay to give a fixed price for swarms of all sizes. Some are worth no more than half the amount of others. Their value differing so much at different times of the season, it is hard to make a season's scale; but the idea is to pay a certain price up to six or seven pounds, after which an increase of one-half is added to each additional pound; for example, ten cents per pound for the first five pounds; fifteen cents per pound for each additional pound up to ten pounds, then twenty cents per pound for all above ten pounds.

* * *

There has not been so much swarming in recent years as is now going on. Every colony seems bent on swarming, whether it be in the side of a house, a neglected one in the back yard, or those under daily care. Swarms are flying in every direction, entering houses by the score, and causing the timid housewife much worry. I have captured sixteen during the past ten days, some by paying a small sum in cash, and some by answering the pleadings of people begging to have them taken away. I attribute the trouble to the advanced condition of bees when the nectar began flowing freely, which seemed to set them wild for swarming.

* * *

There has never been, to my knowledge, a greater amount of nectar in the orange than at the present time. Bees are working it to the limit, and I look for the greatest crop of orange honey ever harvested in this state. The sage is not so promising as a few weeks ago, and I fear there will be much less from this source than has been figured on by many. Bees are flying miles over good sage-fields going to the orange. The plants seem to be less healthy than at one time, and the sage weevil is getting an early start with its work. Bees are paying very little attention to sage, but this may be partly due to the excessive amount the orange is yielding.

Grace Allen

THE DIXIE BEE

Nashville, Tenn.

So many beekeepers in the great Southeast, and not a department in all GLEANINGS we could call our own! And the North and the West and the East, and the Southwest and the far West and the Northeast, all there at the gathering of the "localities," and no corner for a Dixie bee to hum! It was after the convention of Tennessee beekeepers that we cried out, and the editors heard our cry and said, "You, too, shall have a page." And that I understood; but when they said, "*You* shall have the page," that I could not understand. Only the editor can explain that. For in all frankness I am not a beekeeper of great experience. In fact, I am distinctly in the beginners' class. But, if my suspicions are correct, that may be one reason the editor asked me to take this page. Not only a new section, but also a new class, they would thus have. So while this page is to be especially for and about the Southeast, it will also aim to be of interest to beginners, and to women beekeepers — a sort of Dixie bee that hums contentedly within its proper geography, but waves its wings tenderly over the amateur and the woman apiarist.

AN INVITATION

In May come down to Tennessee,
Tennessee, Tennessee!
In May come down to Tennessee—
It's honeysuckle-time!
We'll drive among the winsome hills
Where tangled honeysuckle fills
The cup of scent that spills and spills
In honeysuckle-time!

The mockingbirds will all be singing,
Redbirds flashing round and flinging
Flaming colors through the springing
Honeysuckle-time!
The murmur of the bees, that slips
Along the wind from blossom lips
Will thrill you to your finger tips
In honeysuckle-time!

In May come down to Tennessee,
Tennessee, Tennessee!
In May come down to Tennessee—
It's honeysuckle-time!
You'll think the magic of the bee
And wine-like air and sun-bright tree
Is fairyland. *It's Tennessee*
In honeysuckle-time!

A high-school teacher, writing back to her pupils from Europe, once said, "I hope you may all take this wonderful trip some day; but my solemn advice is, *never do it for the first time.*" If one could only write a page once a month for GLEANINGS, and never do it for the first time!

CLOVER PROSPECTS AFTER THE COLD SPRING.

Our winter might have been borrowed from the North, so long and cold it has been. Even as late as March 30 it snowed all day. But throughout this part of Tennessee the bees seem to have wintered excellently—unusually well, some beekeepers judge (most of them on aster honey at that). But they are late building up. In one of our hives we could not find the slightest evidence of brood-rearing as late as April 4, though another right beside it was well filled with eggs and very young brood. All we looked into had plenty of stores.

Any way, I fancy we shouldn't have opened our hives that day, as the bees, with not a blossom in all their world, went wild over the honey odors, and the little yard was presently in an uproar. We apologized to the defenders, expostulated with the robbers, piled straw over much-contracted entrances, sprayed it with carbolic water, and recorded another lesson learned. To-day (April 7) the old plum in the back yard is in full bloom, and the bees are making it ring with music.

We are hoping, modestly, for white clover this year. Last year there was none in this section, owing to the drouths of 1913 and 1914. There are no blooming prospects now; but from adjoining counties come reports that it is showing up a little, and surely I saw signs of some to be, out on the commons where this end of town runs into country. One of our most successful beekeepers fears that the bees have been so held back by the late spring that they can scarcely build up a strong working force in time to do much good if the clover doees materialize. But we are all hoping.

TENNESSEE FIELD MEETINGS.

"What is an association for, if not for co-operation?" asks Mr. W. B. Romine, of Pulaski, Tenn., the new president of our state association. And that seems to me a splendid association spirit. Some of the members in this neighborhood are going to try getting together informally several times during the approaching summer to get better acquainted and talk shop and learn, learn, learn. A bore to those who already know? But of all whom I know, those who

know most are most eager to know more! It's only a very little knowledge that's a satisfying thing. With this plan in mind, A. I. Root's account of the weekly meetings of beekeepers in Florida was particularly interesting. (March 15, p. 251.)

Mr. Buchanan, the secretary of the state association, informs me that some such well-known beemen as Dr. Phillips, Prof. E. G. Baldwin, J. J. Wilder, Adrian Getaz, and others will be in Chattanooga April 28, 29, in connection with the Southern Educational and Industrial Conference. That surely sounds attractive.

FOUL-BROOD LEGISLATION SAFE.

The beekeepers of Tennessee who were not present at the convention may not know what a splendid fight was put up in Nashville in the winter, when some of the legislators tried to repeal our foul-brood-inspection law. Dr. J. S. Ward, the state inspector, was on the scene day after day, with statistics and general bee-booster literature that was eye-opening to some of our law-makers who had not guessed the real value of bees. And with the help of Mr. Ben G. Davis and a few others Dr. Ward and the Dixie bee won the day.

* * *

Over in Winston-Salem, N. C., is a new organization, the Forsyth County Bee Club. According to County Farm Demonstrator Bruce Anderson it is an enthusiastic young club that expects to grow and produce some real results. One of their rules requires that "members must keep records of their colonies—that is, cost of colony, time of swarming, cost of materials, and amount of surplus secured." Not a bad rule, either.

In a letter recently received the writer remarked that the name at the head of this page attached to my verses did not of itself signify either Miss or Mrs. Well, if any one has the time and patience to read all the way through the following verse, that point may be made clear!

AN OLD-FASHIONED DRIVE.

My sweetheart took me out for a drive
On a day like a dream come true.
We went right into the heart of the hills
Where the sunlight slanted through;
Where old rail fences and low rock walls
Were hung with ivy and moss,
And a pebbly stream sang low in its dream
Till we waked it, splashing across.
The road was a tangle of sun and shade
Under boughs of sunlit green,
With the hazy hue of the distant blue
Where the far hills rose between.

The dogwood-trees were white with flower,
And a sudden sweetness blew
Where the delicate blossoming locust swung
Or the honeysuckle grew.
The woodpeckers tapped and the brown thrush sang,
And, darting along by the fence,
Were bluebirds and wrens and orioles
Exchanging their compliments.
But sweetest of all were the mockingbirds;
They shook out their wonderful notes
With the rapture that springs from a heart that has wings
And a song-bewildered throat.

We stopped at a home in the heart of the hills,
Where the hum of a million bees
Softened the silence with silvery sound
In the scent of the blossoming trees.
A home in the hills and the humming of bees!
A glad content and a friendly hand!
The glad content and the hum of the bees
Will linger long, for we understand.
"Did you like the drive?" my sweetheart asked;
"As well as our other drives?" urged he.
"This drive was the best," my heart confessed,
"Of all our drives since you married me."

NOTES FROM CANADA.—Continued from page 352.

a big difference, no doubt. During real cold weather I sometimes wish that I might spend the winters in a more balmy clime; yet, after all, no country has a monopoly of the good or bad features, and things are pretty evenly divided up, all things considered. During the beautiful cold and clear days of our past winter, to have mentioned going south to our young folks enjoying skating and other winter sports would only have brought a smile of contempt from them; and it is a fact that they prefer the winter season to the summer. While we might desire to be tinkering with the bees early in the season, yet the conditions forbid that here, and at the same time make it unnecessary to do any work at that time. Seemingly the bees get ready for the honey-flow just the same as where the working season is longer. The moth nuisance mentioned by L. H. Scholl is a very minor evil indeed in this climate, largely because the cold weather kills all eggs that are in combs stored away, and as a result we need have no fear of our surplus combs being troubled before we want to use them the next season. And then when it comes to the summer season, needless to say we have no desire to go south then, as it certainly gets warm enough up here to suit us without going any nearer the equator.

Beekeeping Among the Rockies

Wesley Foster, Boulder, Colorado.

Early in February bees were wintering almost perfectly; but March was a cold and stormy month, and colonies are weaker at present than two months ago. The weather has now warmed up, and most colonies are breeding well. The average colony has brood in three combs. It is still early; and with good weather breeding will go on at a rapid rate. We have had a great deal of spring moisture, and the precipitation so far this year is an inch above normal. The snow in the mountains is short, and August will probably be a dry month unless we have rains, which is not likely. Losses have been reported to me from western Colorado as arising from granulated honey in the hives.

* * *

MONTANA FAILS TO SECURE APIARY INSPECTION.

Word has just reached me that the apiary-inspection bill before the Montana legislature was smothered in committee. This bill was drawn by the legislative committee of the Montana Beekeepers' Association, and with the help of Prof. R. A. Cooley, State Entomologist. It was introduced rather late; but the opposition, it seems, came from a small number of beekeepers who have the idea that it is more profitable to let foul brood clean out the small farmer beekeeper, and leave the territory free for the specialist.

* * *

HOW FAR BEES WILL FLY AND GATHER HONEY.

My experience seems to show that bees will not go three miles and gather nectar successfully from alfalfa. I have had apiaries less than three miles apart that would vary from no surplus to 60 lbs. of comb honey—a mesa a mile wide intervening. I have seen a hailstorm extend its ravages several miles in extent and a mile wide, and reduce the surplus of apiaries in its path by 50 per cent. I do not believe bees work successfully on alfalfa much more than a mile and a half. The reason probably is that bees have to work a long time to get a load; and if they have to fly too far from home they decide it is too much sugar for a cent.

* * *

SPRAYING-COVER-CROPS AMENDMENT LOST.

The amendment to the Colorado apiary-inspection law failed of passage. This amendment provided for cutting of cover crops that might be in bloom before orchards in which they grow are sprayed. There was opposition to the bill among some fruit-growers. It is possible that, with more work, the bill might have been passed. All that now can be done is to carry on a campaign of education and publicity. Every county association should have a committee to look after the interests of the beekeepers and confer with the fruit-growers, so that no needless losses may be sustained. By careful selection of tactful beekeepers much good can be done and damage averted if work is begun in time.

Losses will undoubtedly be suffered this year, and the support and co-operation of all beekeepers should go to the beekeepers located in the commercial-fruit districts.

Many beekeepers will doubtless help their fruit-growing neighbors cut the clover, and others will only need to confer with the fruitmen to avert the trouble.

* * *

EXPERIENCE AND TRAINING NECESSARY FOR INSPECTORS.

I have seen a few cases where inspectors have caused unnecessary loss by their zeal. Let me say that an inspector must be zealous, but in some cases the cure has been worse than the disease. Inspectors who have had ten years' experience with foul brood are not unduly drastic in their orders. Burning up hives and combs of all diseased colonies is unnecessary unless the owner refuses to care for the treated colonies. Radically different tactics should be used if foul brood is found in a new and uninfected district than if it is found in an old infected area. Severe measures are defensible to protect clean districts. I have known cases where beekeepers have been fined, and their infected hives and combs burned, because they had not treated diseased material that was stored in a safe place where bees could not get at it. A reasonable length of time should be given to clean up, and the owner should be allowed to save the hives and wax if he is competent. An officious inspector is not a credit to the beekeeping fraternity. It would be a fine thing if every inspector could be given a month of coaching before taking up his duties.

If some method of federal inspection for all interstate shipments of bees could be secured it would help control the spread of bee diseases.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

THERE IS A DIFFERENCE IN MEN.

"Say, Doolittle, why is it that you always write so rosy about beekeeping? Even when you tell us about the hard work and stings which come to the man keeping bees, you do it in a way that makes the apiary look enchanted. I have been fairly successful, and was quite encouraged until I ran across an old beekeeper a few days ago who gave me such a sorrowful account of his life that I have been wondering if I had not made a mistake in starting with bees at all."

Well, now, if I have put too rosy a side to the world in my writings, I am sorry. I have tried hard to keep myself down to just what I have done, and to my results. Perhaps I should have given only the financial side; but when the fun side looms up higher above the horizon than the financial, it is hard for me to pin myself down to the sordid idea of dollars and cents only. Two or three years after I started in beekeeping I became acquainted with two men who had kept bees for a score or more of years. One of them was as sour as a pickle. They told me this man had opportunities when he was younger, but he never seemed to take advantage of them. Since he took up one hive after another till there were hardly two hives of the same pattern in his apiary, so that when he wished to exchange frames of brood or honey from one colony to another, nothing would fit; and when it came to supers they could not be exchanged, nor would they fit more than one or two of any of the hives. When swarms came out he had nothing for them; and while he was working to get things ready the swarm would leave for parts unknown. The grass and weeds grew up in front of the hive entrances. Covers, bottom-boards, and hives were thrown down and left as they were thrown. In one corner of the beeyard there was a pile of hives, supers, and frames of comb that had been there ten years or more when I first visited him. The bottom of the pile was pretty well rotted, and the combs eaten with moth-worms, while more was being added to the top each year.

The other man was very different. His hives were all of one pattern. All of his covers, bottom-boards, and supers were a perfect fit on the hives or on each other when stored away in the bee-house. When in use his hives always stood level while the combs were being built so that all were true in the frames or the sections. Each row of hives was as straight as a line could make them. Did the action of frost during the winter cause the stands to get "out of wind," they were all straightened up during the early days of spring. At the same time every thing was picked up, so that the grass and weeds could be cut and kept in check later when the bees were at work on the white-clover and basswood bloom. And when doing this he was always whistling or singing, to the enjoyment of himself and all who saw or heard him.

When I asked him if he did not get tired of the almost endless round of work necessary to keep his apiary in apple-pie order, he smiled and said, "Certainly not. It has been a pleasure to me all these years, because I find my chief joy in the apiary."

When I questioned him regarding the financial side of the matter he replied, "That is only secondary. What I mean is that the man who takes pleasure and joy in the apiary, or any undertaking in life, for that matter, puts enough spirit into it so that, barring accidents, a financial success is certain to follow." Right here hinges the difference between the successful beekeeper and the unsuccessful one. The former takes the stings and the hard work with a smile on his face as he looks forward toward the evening tide of life, when upon what he has accomplished shall be written "Well done." In the meantime the other grows bitter because he has used no personality in any of his undertakings. The latter has the same chance offered him in the beginning, but looks only on the financial side, and does every thing in a slipshod way. In other words, he can't find the joy and pleasure.

In my farming days I remember a neighbor who whistled and sang as he followed the plow and harrow, even when he was so tired that he could hardly put one foot before the other as quitting time drew near. Sometimes he would stop a moment to look at the straight furrows which had been made during the day, and then across the valley to the farmhouse among the blooming apple-trees, where satisfaction would come from the rest during the night. It is the joy and pleasure in the doing which lifts the man and his work out of the drudgery so many are complaining about. You can not find any great man who did not find his greatness in the joy in his work.

GENERAL CORRESPONDENCE

SOME ADVENTURES IN REQUEENING 200 COLONIES

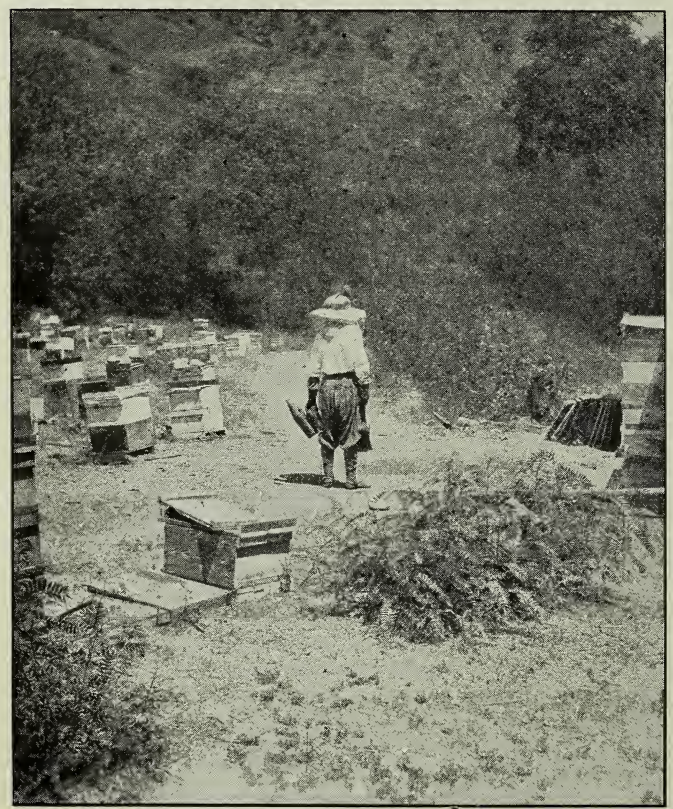
BY FLORA M'INTYRE

Last summer we decided to requeen all colonies with two-year-old queens, and all that had shown any trace of European foul brood in the spring, making about two hundred in all. The next question was, "Who will do the work?" Mr. Hicks, who had had the bees on shares, was to give them up at the end of the season, and did not want the job. I said to the Mother, "We can do it ourselves. You and the School Girl can do the work with some unskilled help, perhaps. I will be Chief Adviser, and perhaps the Teacher will help." And so it came about that the Mother and I arrived at the ranch June 17, with a camp outfit and an A B C and X Y Z in case several years away from the bees should make us a little uncertain on some points.

The Teacher arrived next day; and on the 19th, work with the bees began. Mr. Hicks marked in the book the three best colonies in the apiary, from all of which we took larvæ for queen-rearing in the course of the summer. These colonies had resisted foul brood, and gathered several superfuls of honey each this year, when the apiary as a whole produced only about half a crop. Six colonies (which proved later to be too many) were made queenless for cell-starters, and two were discovered to be superseding. So we started two sticks of cells right away, and began our "cells started" record with

6—19 C 25 fr. D4
6—19 F 20 fr. D4

The fourth colony in row D was the breeder used. The Mother did the work in the apiary, while I, having had more experience with queen-rearing, and being too much of an invalid to work among the bees, gave directions and transferred the larvæ. No transferring-tools were to be located that first day; but we were too eager for the work to wait, so we improvised. A short search brought to light a chicken feather. This was quickly cut into the desired shape for transferring; and for handling the royal jelly the ever-useful hairpin answered very well. Later we purchased an ear-spoon. Wooden and wax cell-cups and cell-protectors were included in our baggage. The Teacher cut out the lower half of two combs, and drove two small nails into the end-bars, just far enough



Ready for work.

below the comb that remained to hold a shortened bottom-bar in place as in the illustration. On two bottom-bars shortened to fit into a frame she placed wooden cell cups and pressed a little wax-cup into each. I put in the royal jelly and the larvæ, placed the sticks in the combs and wrapped all up carefully to keep the temperature even on the way to the hives. The Mother put a frame each in the brood - chambers of C25 and F20, and the first day's work was finished.

In August, when the job was nearly done, we felt that we had proven that it could be done by one woman who would not for a moment be called strong. After we had been on the ranch about two weeks she and the Mother worked together with half a day's help from Mr. Hicks in killing queens. Then the Teacher and the Mother left the ranch, and after that the School Girl did the campwork, some irrigating, and the beework alone under my directions. Of course she could not give the bees full time. So I think we averaged one woman in the bees for about two months.

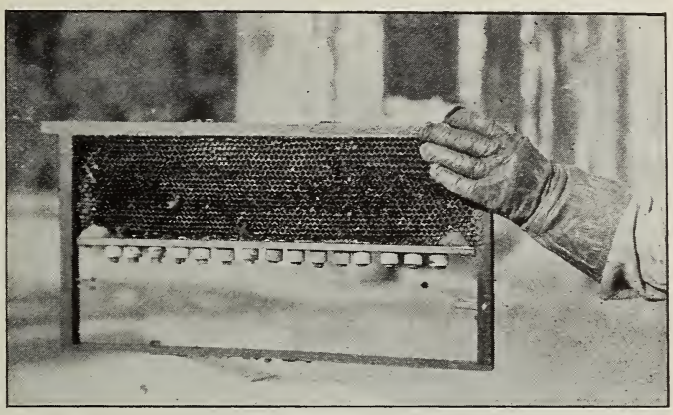
The Teacher is one of those benighted persons who do not like bees. She worked for one day with the Mother killing queens; but her motions were jerky, and that made the bees insufferably cross. The next day she started work on her own hook; but after opening three hives and finding only one queen she left the apiary in great haste, followed by a cloud of angry bees. After that she devoted herself to the campwork, to getting the Mother's wardrobe ready for her vacation trip, and to irrigating the young orange-trees. Referring to the last-named work, which was done with a hoe and a hose, she said she did not mind "heavy plowing," but could not stand beestings. The Mother, who is past fifty, and bothered with "nerves," found that her trouble was much better than when doing housework with a number of people around talking to her. The School Girl, who is in her later "teens," found the work lonesome; and so differing dispositions make the same task unbearable, pleasant, or just tolerable.

I am forbidden to tell all of our mistakes and accidents, but perhaps some of our experiences, discoveries, and lessons learned will be of interest.

DILUTING ROYAL JELLY WITH WATER.

Mr. Hicks suggested that we dilute the royal jelly with water, mixing it thoroughly until it was thin and smooth like that which the bees give to very young larvæ. He said that he had had much greater success in getting cells accepted after he stumbled upon that idea. With our dry climate the small quantity of jelly that we put into a cell dries out a great deal during the few minutes that it takes to get a stick of cells ready and into the hive. So we followed the suggestion; and one day while preparing royal jelly I came upon some that had dried down into a hard amber-colored lump. Without giving it much thought I dropped it into the glass of water I had standing near, and went on with my work. Presently I glanced at the water, and was surprised to see that the once hard amber royal jelly had increased in size two or three times over and that it was no longer amber-colored but white. It was so soft, too, that I had some difficulty in fishing it out of the glass; and as it looked just like fresh royal jelly I stirred it in with the rest. No bad effects were observed. Several times after that I baited sticks of cells entirely with jelly that had dried hard, been softened again in water, and worked smooth. These cells were accepted exactly as well as those started with fresh jelly from an unsealed cell. We valued that discovery because we never could bring ourselves to tearing down one of our own nicely started artificial cells just for the royal jelly when the fresh article was scarce.

Once we tried transferring larvæ without royal jelly; but they looked very much dried before we got them into the hive, and,



Stick of cells prepared for the hive.

Bees have no lack of clover near Union Center, Wis. Photographed by Mrs. G. W. Barge.

as we expected, no cells were accepted. Then I tried putting a drop of water into each cell before transferring the larvæ. The surface viscosity made it possible to float the larvæ as upon the royal jelly; but only four out of fifteen cells were accepted. I decided that there was probably too much water in the cells, so I tried another stick with the bottoms of the cells just dampened with water; but again only four cells were accepted. About this time the School Girl decided that experimenting made too much work for the results in the way of cells accepted; and as there was now plenty of royal jelly I had no excuse for trying any thing else. We know, however, that, although the royal jelly may be made as thin as milk, clear water is not satisfactory.

VARIATION IN THE ACCEPTING OF CELLS.

We found a great variation in the enthusiasm with which different colonies accepted our artificial cells. Some would habitually accept a dozen or more out of fifteen cells, while others would, time after time, give only three or four accepted cells. We soon learned not to blame ourselves for this, but to discard the lazy ones and retain as cell-starting colonies only those that accepted a big majority of the cells given.

We found that two good cell-starting colonies and a nursery would furnish about as many cells each day as one woman should handle. It is a great temptation, during the first few days, when the work consists only of cell-starting, to prepare a great number of cells; but finding and killing queens is the hard part of the work, and the part that limits progress; and as a woman should not try to find and kill more than twenty queens in a day, many more cells than that coming on each day would be a superfluity. There is no time for starting nuclei when the work consists of killing queens, introducing cells to colonies made queenless previously and starting more cells.

Dequeening should begin about five days after the first artificial cells are started, so that a ripe cell may be introduced in a protector, and the queen hatched before any of the natural cells in the hive have produced virgins ready to make trouble. By this plan the virgin from the artificial cell hatches late enough to be accepted by the bees, and yet in time to tear down the natural cells. Since the honey-flow was becoming slack when we commenced work, we were not bothered by having swarms go off with our carefully reared virgins, as we

doubtless would have been if there had been much honey coming in.

When we had finished dequeening we began starting a few nuclei each day until we had twenty, and into these we put our surplus cells, thinking they would furnish a sufficient number of laying queens to supply those colonies which should prove to be queenless when we inspected for layers. When the School Girl began inspecting, however, we saw that we would probably need more queens than our nuclei would supply, so we began starting one stick of cells each afternoon. (We always start them in the afternoon, when the air will be warm enough to prevent chilling the larvæ.) Since these sticks as they were removed from the cell-starting colony were placed in a nursery at this stage of the work, we were using only one colony as a cell-starter.

THE NURSERY.

Our nursery consisted of a strong colony with a queen below the excluder and two combs of brood lifted into the super. Our cells were placed between these brood-combs. We put two sets of nails in our cell-starting combs so that each one could hold two sticks of cells when placed in the nursery. When the brood in the first two combs was pretty well hatched we replaced them in the brood-chamber and brought up two fresh combs of brood.

As there was little honey coming in we fed the nursery slowly in the following manner: A corner of the cloth over the super combs was turned back a little to let the bees come up to our feeder, which consisted of a quart fruit-jar turned upside down on a saucer, with a little stick placed under the edge of the jar. Over this we placed an empty super covered with a cloth and hive-cover. We used this primitive arrangement in spite of the fact that there were several hundred regular feeders of two different types stacked up in the shop. It offered less opportunity to robbers than the outside style of feeder, and was more convenient to watch and fill than the division-board style. We fed sun-extracted honey thinned with water.

THE SMOKE METHOD OF INTRODUCING.

When the School Girl had finished inspecting and marking "L. Q.'s" and "N. L.'s" in the book she introduced all the laying queens we had in the nuclei by the much-lauded smoke method. We did not find this absolutely infallible; but even so we like it because it is so convenient, and works often enough to pay. Then she supplied all queenless colonies, including the nuclei, with cells, and we left the apiary August 19.

Some time later (Sept. 20) the Mother spent a few days at the apiary, where she inspected the colonies we left with cells, irrigated orange-trees, and doubled up to dispose of nuclei and queenless colonies. She reported a rather large percentage of "N. L.'s" where we put our last cells. It was too late in the season, I suppose, and some colonies had certainly been queenless too long. This year we hope to begin work somewhat earlier, especially if the honey-flow is short.

Ventura, Cal.

QUEEN-MATING NUCLEI

A Perfected System Developed for Economy of Operation

BY ARTHUR C. MILLER

How much does it cost to raise a queen? Possibly the professional queen-raisers have a fairly accurate idea; but those with whom I have talked have been unable to say what each part costs, or whether any one part can be reduced further.

Cell-production by several methods is fairly economical; and by one at least (the Fuller) is brought, seemingly, to the lowest terms. Introduction of virgins has also been brought to as near perfection as the business demands. Mating nuclei, however, are much more costly than they should be. The most costly are those of two or three standard frames; and the least costly, when properly used, are the "baby" nuclei.

HISTORY.

The use of small nuclei for queen-mating dates far back, just how far we may never know.

Jonas De Gelieu of Neuchatel, Switzerland, writing in 1814, after sixty odd years of beekeeping, carefully describes a nucleus box six inches square and the method of stocking and using it. He gives the credit of its origin to Schirach; and, as the latter was familiar with the usages of much earlier ages, it may date back away before his day. De Gelieu's nuclei were fitted with an assortment of five combs, some empty, some with honey, and one with brood, "especially maggots two to three days out of

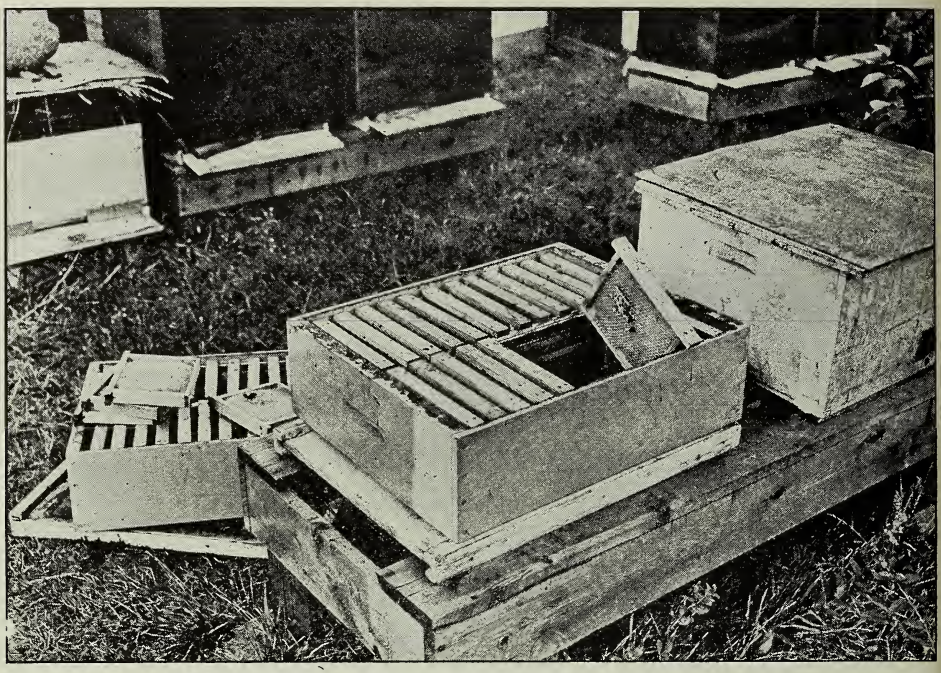


FIG. 1.—Stock chambers for nucleus-hive outfit.

the shell." These hives he stocked with one thousand to fifteen hundred workers, and shut them in with a "wire grating" for three days. These nuclei of De Gelieu were for raising as well as for mating the queens. We are struck by the remarkable similarity of this system with that described by Quinby in 1860.

Henry Alley appears to have been the first to operate them on a definite and extensive plan. Alley used miniature hives holding five frames, each about six inches square. These hives he stocked each season by pouring in half a pint, more or less, of bees, confining them for a day or two, and then giving them a virgin queen or a cell. But he also had a "stock" hive. This consisted of a body which held ten of the little frames. Three or four such bodies tiered up would hold a fair-sized colony and furnish him with brood for the little hives. But these stock hives were of awkward proportions. He could not successfully winter them out of doors, and even indoors the results were often a disappointment to him. So he depended mostly on bees shaken from combs for stocking his small nuclei. He recognized the value of a "stock" hive, but failed to make one successful.

Later E. L. Pratt, a pupil of Alley's, brought out a nucleus very much smaller than Alley's, and more thoroughly systematized, in that the frames were designed so several would fit within a regular L. frame, and were stocked with comb, brood, and stores in standard colonies. This made comparatively easy the seasonable stocking of the nuclei and the economical disposition of brood and bees at the close of the season.

Alley's nuclei were a great economy over the use of standard frames, and Pratt's were an advance over Alley's, but both called for an almost constant oversight. Alley's nucleus box and frames were substantial and easily handled, but he lacked a satisfactory "stock" hive. Pratt's "stock" system was practical, but his nucleus box and frames were frail.

The principal drawback to Pratt's system of using the little frames inside of standard ones for stocking was the time and trouble of adjusting or removing them, which was much aggravated by accumulation of propolis. Also at first there was much breakage of the small frames, but later they were made stronger.

Both Alley's and Pratt's nuclei needed almost daily attention, and each had to be alert that the little colonies did not get overpopulous and swarm. Taken all together, the troubles with the little nuclei are so many that the average honey-producer prefers to use nuclei of two or more full-sized combs each. And I understand that the

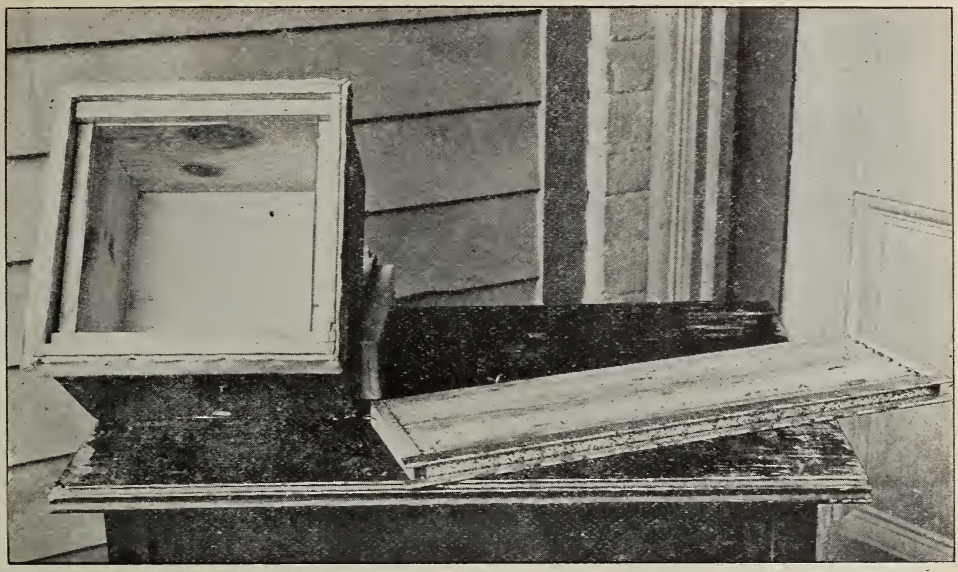


FIG. 2.—Slatted partition used in stock-chamber and nucleus hive, showing inside.

commercial queen-raisers who use the "baby" nuclei have more or less trouble with them.

Baby nuclei properly formed are a real economy so far as bees are concerned, for one good colony will make twenty-five to fifty, whereas it would make but about five if on standard frames. Besides cost of bees there is the difference in cost of equipment —an item of no small consequence. As an offset against saving in bees and equipment in using baby nuclei is the matter of labor in watching over and caring for them. Which is the cheaper?

I puzzled over that question for a long time. I wanted to use the little hives because of the economies, but I *must* be able to leave the little colonies to their own devices for days or a week, or even more at a time, and that seemed to be impossible. Little by little, however, I found out the laws underlying their behavior; and when I finally found that the "moist" sugars sufficed as food for them, as well as for full colonies, I had only to devise a suitable "stock" hive to have a complete system economical in every detail. For some years I have had such a stock hive and system, and I believe that I am warranted in considering it as low in first cost, and as economical in labor and attention, as anything yet described. I am not a commercial queen-raiser; and while the system is perfectly adapted to their use, I worked it out from the standpoint of the commercial honey-producer.

The basis was Alley's nucleus, which was slightly changed in dimensions to enable me to use the frames in standard fittings. The nucleus hive used by Alley was heavier than I thought necessary. The syrup-feeder arrangement I did not use, and the flat cover would not stay put without a weight or fastening. Also, in my location the cold nights and fogs called for a warmer hive, one better protected from external changes, and one in which a small lot of bees could keep things as they desired, as well as a large lot in a big hive. To accomplish this, and at the same time have it light and convenient, as well as inexpensive, was not at first easy; but the goal was finally reached, and the complete outfit and system is here described.

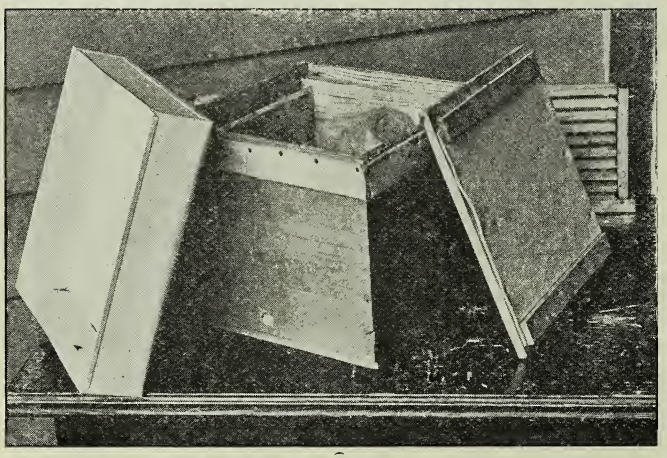
THE EQUIPMENT.

First, the "stock" hive. The floor is standard. The "bodies" are standard deep supers with rabbets along the long sides instead of along the ends (*i. e.*, supers for crossway frames). The covers are a standard super cover and a telescope cover. One to five "bodies" are used for each "stock" hive.

These "bodies" are arranged inside in the following manner: The rabbets are cut deep enough for metal rabbets to be used. Longitudinally through the center is hung a slat-filled frame having metal rabbets along each top edge. This frame is as long as a standard brood or super frame, and the tin rabbets are as long as the inside of the "body." Into the inside of the ends of the

body staples are driven, and the tin rabbets of the frame hang on these. The result is a slotted partition down the middle of the body, and the rabbets on it level with those along the sides, and the bottom of the partition is flush with the bottom edge of the body. The partition is 7/8 inch wide. The top slat is 1/2 inch thick, and the others are 1/4 inch, and spaced 1/4 inch apart. To prevent the partition from swinging, a staple is driven into the bottom of each end. They are allowed to project so they bind against the body ends. All of this will be plain by consulting Figs. 1 and 2.

The little frames, which are 5 1/2 inches deep by 6 1/4 long, have short ends to top-bars; are end-staple spaced, and made of stock 7/8 inch wide. Top and end bars are 3/8 inch thick, and bottom-bar is 1/4 inch thick. If I were making new ones I would use stock one inch wide. Twelve of these little frames go on each side of the partition and spacing, and supports are such that trouble from propolizing is reduced to a minimum.



Queen-mating nucleus hive showing outer and inner cover (a corner of the slatted partition used in the stock hive showing in the background.)

The nucleus box is shown in Fig. 3. It consists of two boxes made of stock 1/4 inch thick, the outer box being 8 1/2 inches square by 7 1/8 inches high outside measure. The inner box is 7 3/8 inches square by 5 5/8 inches high, outside measure. Between the two at bottom, and around all sides, is a double thickness of wool felting. Metal rabbets close the top of the felt-filled space on two sides, and strips of wood are similarly used on the other two sides. The entrance is a half-inch hole bored on a slight upward slant, the under side of the inner end being flush with upper surface of the floor of the inner box. A tin tube lines the entrance passage, preventing air or moisture getting in between the boxes at that point. Frames hang side to the entrance. A strip of folded felt one inch wide is nailed about the upper edge of the box as shown, and this serves to make the cover virtually air-tight, and prevents its blowing off. The inner cover is a square board 1/4 inch thick, the upper surface felt-covered and cleated. The outer cover is of good heavy tin, with hemmed edges, and painted white inside and out. It is two inches deep. All of the felt is lightly oiled with thin mineral machine oil to prevent the depredations of moths and to lessen the effect of moisture.

The feeders for the nucleus hives are simply miniatures of the division-board type. One of these filled with soft sugar is used in each nucleus. A feederful will usually last through the season, the amount consumed varying with the supply of nectar secured. Any of the fondant sugar candies will do as well; but where a satisfactory moist sugar can be bought it is easier to use and is cheaper.

Except for the white tin covers, everything pertaining to queen-raising is painted a light slate color. This is to facilitate the work —no guessing as to what is inside a "super" of that color, and no wondering where a "stock chamber" was put, if it was set on some colony for stocking with bees or honey.

The nucleus boxes cost 18 cents per pair, including inner cover; rabbets and tube for entrance 2 cents for each hive; tin covers, 16 cents each; cleats, etc., 3 cents per hive. Felt was scrap I got from a mill, and I cannot tell what it would cost, but probably an equivalent could be bought for not to exceed 5 cents per hive. This makes the total cost of a nucleus hive without feeder 44 cents. Paint and labor is extra. Frames cost 2 cents each. Any one trying such an outfit, and working from my figures, should be sure to use supers 16 inches wide. If supers 16 1/4 inches wide are used, the slatted partitions will need to be 1/4 inch thicker.

OPERATION.

The use of this equipment is simplicity

itself. The "stock" chambers are filled with bees either by running in a natural or forced swarm, or else a chamber is set over or under a full colony until the foundation in the little frames is drawn out and filled with brood and stores. Then they are placed on a stand of their own and given a queen. A light-colored queen of quiet ways is to be desired, as it greatly lessens the chance of taking the queen when making up nuclei. And when the system is thoroughly established it will be found worth while to keep these stock hives headed by queens whose offspring are quiet, good protectors of home, and given to minding their own business.

Two stock chambers will hold a strong colony. In the spring additional chambers are added, and the colony allowed to occupy all the room it will. Bees winter as well in these hives as they do in standard hives. As the chambers are of regulation size, they will take regular honey-boards, etc., so that colonies in them, if not needed for nuclei, can be supered and manipulated the same as any colony.

When a nucleus is wanted, a "stock" hive is opened, two of the little combs of brood, stores, and bees are taken and put into a nucleus hive, together with a sugar-feeder, the covers put on, entrance plugged with a leaf, and the hive set where it is to stay. A cell or a virgin queen is given later. The vacancy left in the stock hive is filled with frames of comb or foundation. Nearly a whole stock colony may be used thus, leaving only two combs of brood and bees with the queen. In such a case, the stock hive is reduced to one chamber, and the entrance contracted. The field bees which return will give it a good start in rebuilding.

If a nucleus gets a little weak, one of its combs is exchanged for one of brood and bees from the stock hive; or if, perchance, one gets too populous, a comb with adhering bees is taken from it and exchanged for a comb of stores from the stock hive or for a dry comb. In this shifting of combs, it is only necessary to have a care what is used, and, when a virgin is in the nucleus, to observe the necessary precautions, whether standard frame or baby nuclei are used. In making any nuclei some pains must be used to get a fair balance of brood and bees, and this is easier with a lot of small combs to select from than with a few large ones.

Two combs of brood and bees are all that are used in a nucleus, although occasionally a third comb may be put in, but not often, and never more than that. The little hives will hold five frames; but two or three and the feeder are the limit of what are used. The occupied combs are next to the entrance, the feeder behind them and the vacant space behind that. Thus arranged, the little colonies will take care of themselves for one to two weeks at a time and not offer to swarm out. Fill the hive full of combs, even if one or more of them are empty, and swarming out may become a nuisance. I do not know why. Recently a man in Texas confirmed this.

It will be noticed that the brood is placed next to the entrance, and the vacant space is at the back. This is the opposite of the principle for prevention of swarming as laid down by Langstroth, and later emphasized by Simmins, that the vacant space should be between the brood and the entrance. But with these nuclei we are not dealing with a normal swarming impulse, but with something having to do with the bees' ability to protect their entrance, and at the same time have freedom from any sense of crowding. Be the "reasons" or causes what they may, thus arranged they "stay put," while differently they may not.

So long as these little colonies have room and food, they work on as normally and seemingly as cheerfully as a full-sized colony, even to the extent of raising a good queen now and then—not that they are ordinarily permitted to do such a thing, but once in a while one is overlooked after being dequeened, and then they raise a queen. I have seen as fine a queen raised by a couple of hundred bees in one of these little nuclei as was ever raised by a full colony. Of course, the conditions as to nurses, food supply, temperature, etc., were all just right. The temperature in hives made as described is easily controlled by a very small number of bees: they readily protect the half-inch entrance, and the sugar stores attract no robbers, except the ants. And ants, by the way, are sometimes a nuisance when sugar or candy food is used; but setting the nucleus on a piece of tarred paper a little larger than the hive usually prevents their attack. If once started they may continue despite the application of the paper, and then I have found it necessary to lift the combs and bees into a fresh hive, giving a fresh feeder; and with a brush and any of the creosote compounds, draw a line on the paper around the hive. That gets rid of the ants in the hive, and those outside seldom set up a new line of march across the creosoted strip. Where hives are on stands, treating the legs with the creosote compound will usually suffice, provided the ants are gotten out of the hives first.

Two minor items are worth mentioning, as they add to the general convenience of the operator. The floor of the inner box is painted with enamel white paint, for two reasons: First, if it gets sticky it is easy to wipe or rinse clean; second, if the young queen is timid, and runs from the combs to the floor, she is easily seen. When holding any nuclei very late into the fall for mating choice queens to selected drones, the nuclei are made quite strong, as baby nuclei go, by shaking in young bees and then a piece of wool felt is laid on top of the frames and under the regular inner cover of wood—seemingly small matters these, but some small things save many large troubles and losses.

Toward the end of the season, when the number of nuclei needed is diminishing, the surplus ones are united with any stock hive by the simple process of putting on to the latter an empty stock chamber and hanging the combs and bees from the nuclei into it, observing only the common precautions used in uniting bees. As such wholesale uniting is done when colonies are contracting, the bees will leave the upper chambers soon after the last of the brood emerges, and then all chambers not needed are removed and the colony is supplied with stores if necessary. Thereafter it is treated and wintered as are colonies in standard hives.

Providence, R. I.

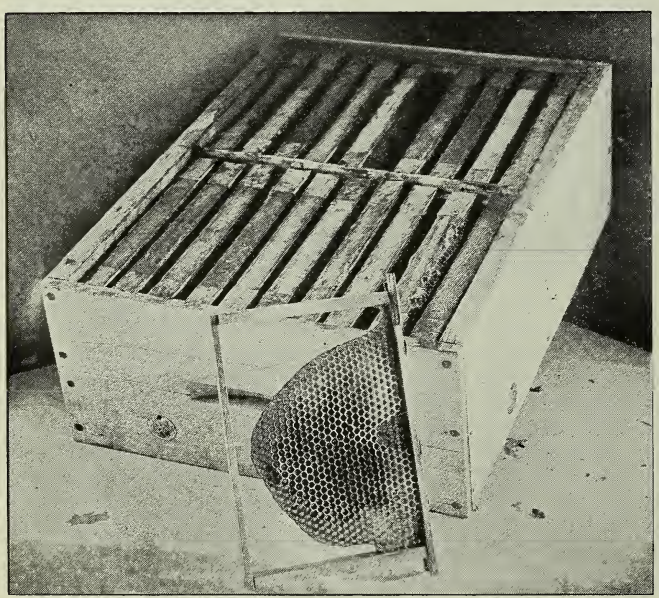
PRACTICAL METHODS OF QUEEN-MATING FOR THE BEEKEEPER

BY E. F. ATWATER

In rearing queens for our own use we have for several years used about 100 nuclei, containing the little frames 5⅝ x 8. By proper use they certainly will give the best of results. For some years we would fit three of these little frames into one standard frame, to get them stocked with brood or honey, or to get combs built.

A few years ago, however, I found that a shallow extracting-super, 6 inches deep, as shown in the cut, with a board across the inside, we made a super or brood-body that would hold twenty of the little frames. The partition is made of two 7-16-inch boards with a folded tin projection at the top.

Since we keep one or more colonies in such hives at all times, we always have a place from which we can draw brood or honey. These prepared supers may be tiered as high as desired. Perhaps the queen would better occupy both parts of each section if the division-board were of slats, bee-spaced apart, as in the Aspinwall hive.

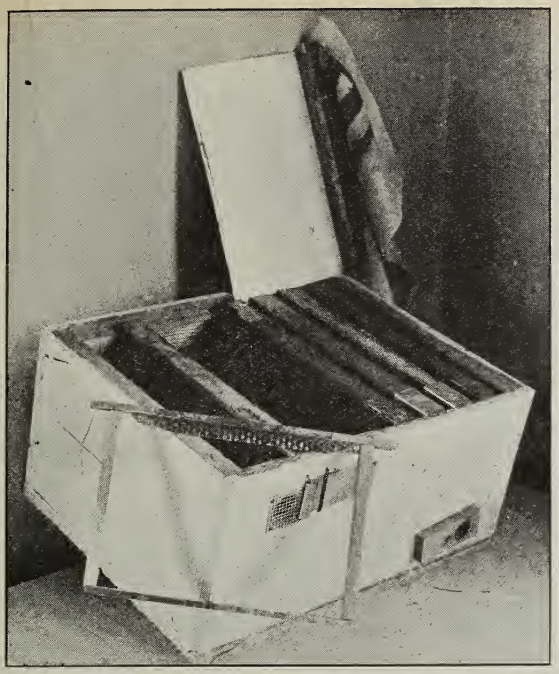


A shallow extracting-super can be converted into a handy brood-body containing twenty little frames.

When we wish to start our nuclei, if we have not enough combs containing some honey reserved from the previous year, we take several of these supers containing twenty of the little combs (even spaced so that each contains 22) and put one on each of several strong colonies.

Under such colonies we put either an Alexander feeder or one of our feeder-bottoms, and about every hour we feed these colonies until the little combs contain sufficient honey. This does not take long.

For our use we find that the little twin nucleus boxes are not the



A smaller body can be constructed on the same principle. Note the tin division-board.

best. So we make other boxes similar to the first, except that each side has space for four frames, and a tin division-board in the middle has canvas tacked to its top-bar for covering each side. A ventilator, as shown, is provided for each compartment. The little button contains a bit of perforated zinc, which may be turned to cover the entrance, when desired. The lids are double, air-spaced, covered with metal, and painted white.

When we start our nuclei we bring bees in swarm-boxes from outyards and put them in a cool place. Into each compartment of the nucleus hive, one of the combs of honey is placed; and next to it, if we have it, an empty comb; or, lacking this, a frame with a narrow starter.

In four to six hours after confining the bees we smoke them in one of the swarm-boxes with tobacco smoke, and then dip a large cupful into each compartment, cover with the quilt, close the entrance with the button, open the ventilator, and put on the lid.

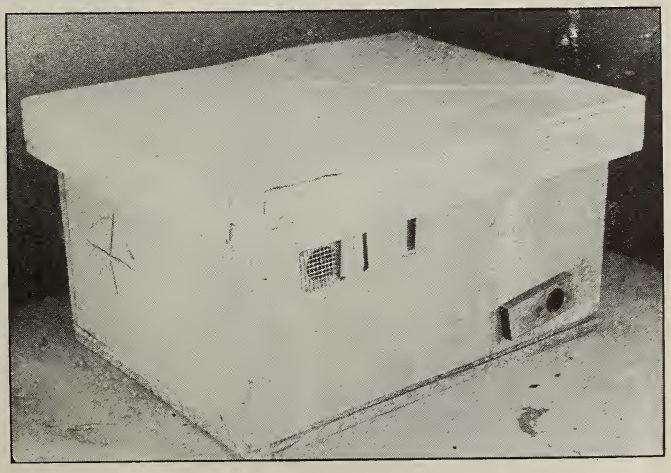
When all are filled, we run a virgin into each compartment, following her with a little tobacco smoke. Virgins of any age are usually accepted.

That evening the little boxes are set in their places. Early next morning the entrances are opened, or else at time of forming they are set in their places in the shade, and the entrances filled with candy, so that they will release themselves at pleasure.

The extensive producer can not watch his nuclei as closely as necessary with the little two-frame compartments usually employed. With ours, however, each containing room for four frames, one has only to add a frame with a starter to the stronger ones, when they will fill it with fine worker comb as soon as their queen commences to lay.

If the queen is not needed at once, another frame with starter will keep them busy for several days more. Then when brood begins to hatch, they may be divided by taking the laying queens and a frame of brood and bees, and putting them in another nucleus hive. The little colony on the old stand will gladly accept another virgin in three days.

Meridian, Idaho.



Each compartment has its screened ventilator.

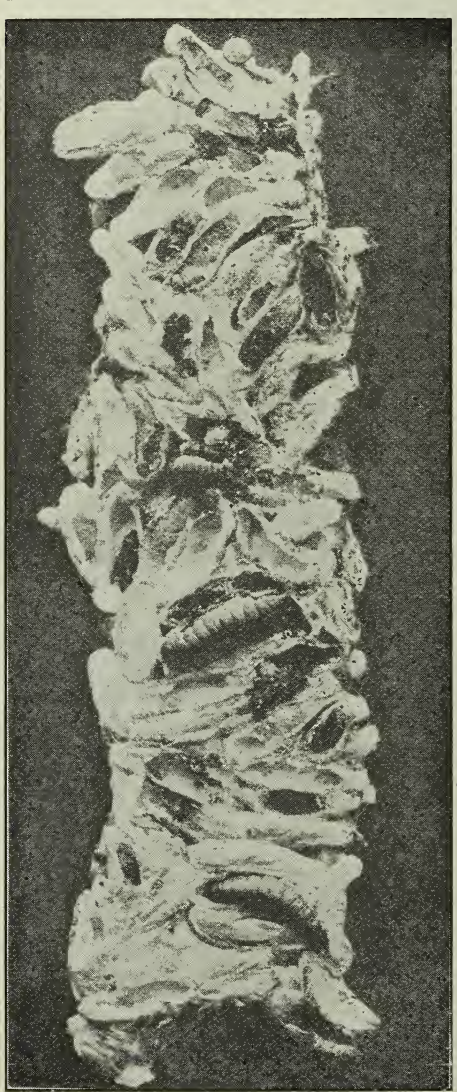
A PHOTOGRAPHIC INTERVIEW WITH THE BEE-MOTH

BY CHARLES Y. HAKE

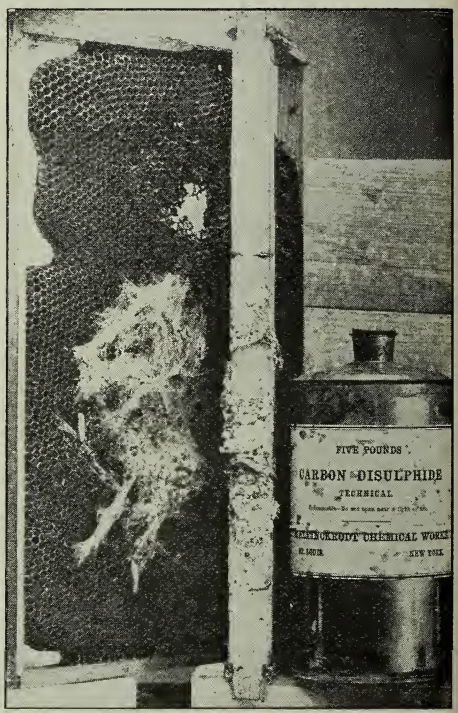
The bee-moth I consider the quickest in action and the most destructive pest of the honeybee. We can be thankful for carbon disulphide, quicker in action than even the bee-moth, and sure death to the enemy.

This case of bee-moth in my apiary does not show any carelessness on my part, but was merely a snare or trap to draw most of the moth to one particular place. I placed five brood-frames with old comb in a box hive at one end of the yard, leaving the entrance wide open for whatever would go in. After leaving it in this condition for eight days I made an examination, and the results are shown in the photographs.

One of the pictures represents a regular brood-frame spun with bee-moth web and cocoons in the center containing live moth larvæ. To the right of the picture is a can of carbon disulphide, the chemical I use to destroy these pests.



Cluster of bee-moth larvæ photographed exact size.

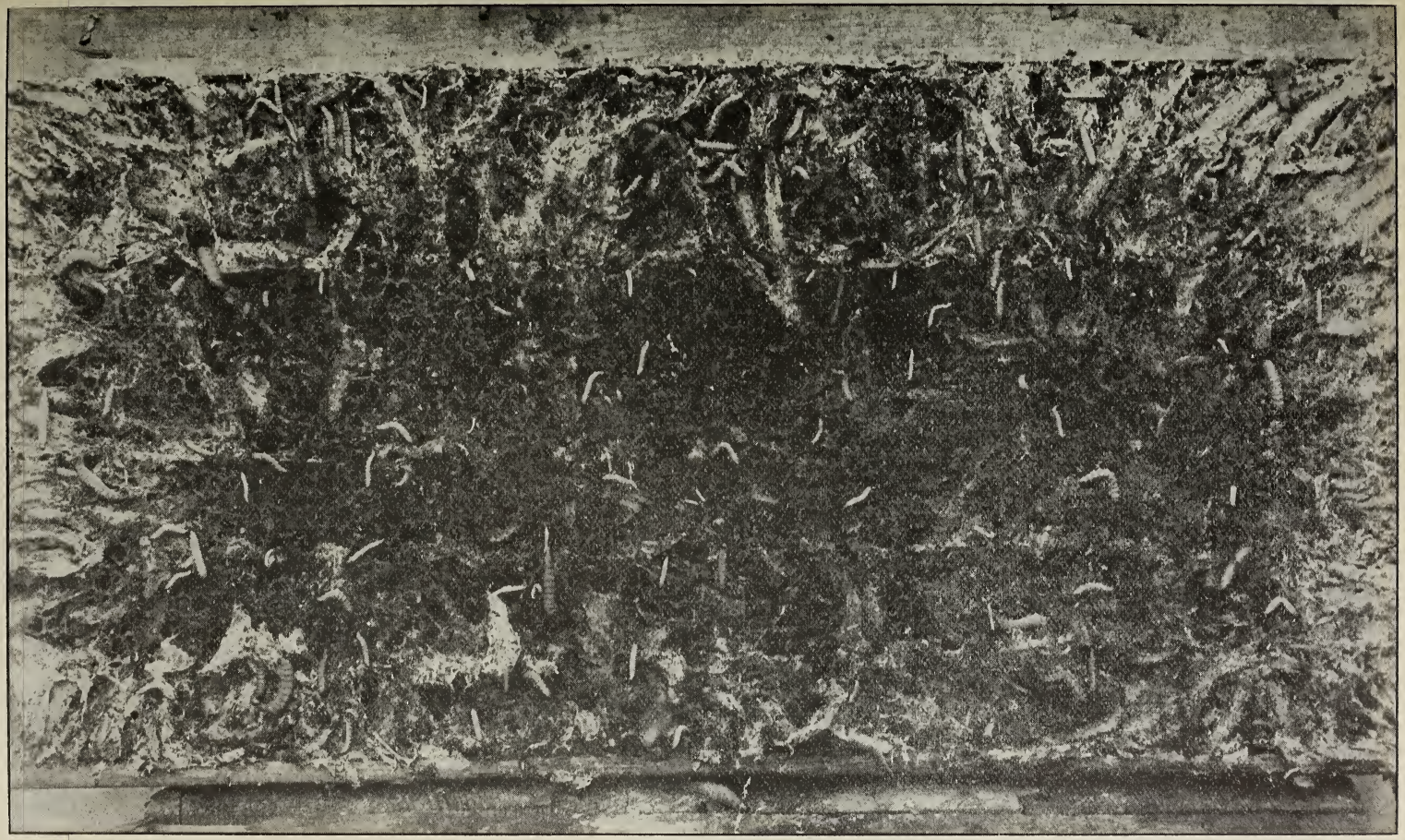


Web and cocoons in the center of a brood-frame.

Another picture represents a cluster of bee-moth larvæ photographed life size. This was fastened between a brood-frame and the end of the hive.

York, Pa.

[Some time ago, a hive of empty comb was left out by mistake at one of our outyards. When we found it the combs were literally covered with moth larvæ. The large illustration shows the result but gives only a faint idea of the number of tiny larvæ, the moth webs, and the channels through the comb.—Ed.]



A neglected frame alive with bee-moth larvæ.

Ants are avoided in this Porto Rican apiary by placing the hives on iron rails. Eighteen barrels of honey from 25 colonies that were increased to 150.

A PORTO RICAN APIARY PLAN

BY J. SAMUEL COX

The one of our apiaries illustrated is shaded by banana-trees. In an open field these are very serviceable for shade, since they grow quicker than almost any other plant, and, besides, the shade can be regulated to any one's desire by cutting the leaves. Nearly all the leaves can be cut off without damaging the plant.

Our apiary here is laid out on a plan that has been mentioned somewhere in GLEANINGS. I think it one of the best, not only because it helps the bees and queens to locate their individual colony, but it gives to the apiary a business-like appearance. I agree with the saying, "Fine feathers do not make fine birds," but I believe in the hobby of appearance. I have seen many come to view an apiary who would never go near enough to see the inside of a hive, and these persons have gone away elated, simply from the appearance.

Our hives here are put on iron rails such as are used on the car line. Since the entrances are placed facing each other, there is a passageway between the backs, so that a wheelbarrow can be run without interfering with the entrances. The hives are placed two by two. The closest are eight inches apart, and the next two are three feet away. This apiary was started in August, 1914, with twenty-five colonies. We have increased it to 150, and have taken 18 barrels of honey at the end of December.

Guayama, Porto Rico.

MONTANA AND WYOMING BEEKEEPING

BY WESLEY FOSTER

Bees in Montana did not do so well in 1914 as in 1913. The reason for this I have not learned. The beekeeping area is confined to the narrow irrigated valleys. There is no wide extended irrigated area such as may be found in eastern Colorado and especially northern Colorado.

The precipitation in Montana is slight, as it is in Wyoming. On January 24, about four inches of snow was on the ground, and I was told by one man at Billings that it was the most snow they had had for four years.

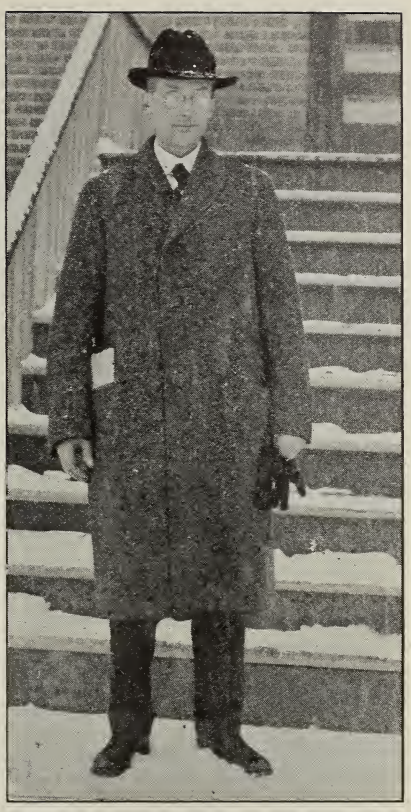
Alfalfa and sweet clover are the sources

of the nectar; and, while the seasons must be somewhat shorter than those further south, the days are longer and warmer than one would think for this latitude. It does not get dark until 9:30 or 10 o'clock here in the summer season, I am told, and that makes for a long growing season.

Montana is a rapidly developing state, and is destined to have a bright future. Every one seems to be doing well. Wages are high, and living also. Shaves are 25 cts. Meals at the restaurants and hotels are generally 50 cts. Nothing less than 10-cent cigars are sold, and pennies are not used in this state. I have not seen any except those I carried into Montana in my pocket.

Honey production is only in its infancy in this state, and it is bound to increase. Cattle and sheep are raised by the thousands, and the alfalfa grown finds a ready market for feeding purposes. Alfalfa will for a long time be the principal farm crop. Sugar beets, potatoes, grain, etc., are grown, but alfalfa is king. The river bottoms show that sweet clover is taking them with gratifying speed.

I mentioned that alfalfa and sweet clover furnish the surplus in Montana. Since writing this I have learned that alsike and white clover also furnish considerable honey in some of the valleys. While in Bozeman, Prof. R. A. Cooley, State Entomologist, gave me an opportunity to sample some of his comb honey which had a very pronounced flavor of alsike. Prof. Cooley is a beekeeper, and has a son he intends to train for a beeman.



Dr. Kopenhafer, president of the Montana Beekeepers' Association.

BEEKEEPING IN WYOMING.

Four main districts in Wyoming produce honey. Since the development has not as yet been carried very far, the total honey-producing possibilities can hardly be estimated. Most beekeepers are probably to be found under the Shoshone project in northwestern Wyoming in the lower Big Horn Basin. Ralston and Powell are the centers. Several cars of honey are now shipped from this district. The other important district is probably around Lauder in southern and central Wyoming. Several cars of extracted honey are produced there annually. The district in which Wheatland is the center has been a honey-producing district for some time, but does not produce as white a quality of honey as formerly. One of the disadvantages of this country around Wheatland is a wind which blows all the time, ac-

Street scene in Worland, Wyoming, one of the towns in the Big Horn Basin.

Mr. Pratt's apiary, Wethersfield, Ct., where the Connecticut Beekeepers' Association met in 1914. Photographed by A. E. Crandall.

cording to some I have talked with. This is exaggerated, but a windy country is one that should be avoided by the beekeeper if possible.

All the districts of Wyoming have more trouble in wintering than the milder climate of Colorado. If the snow falls in November in the Big Horn Basin it does not go off until spring. There are no warm chinook winds. There is but little snowfall, however, and the annual precipitation is below eight inches on the average.

The most successful beemen give their bees protection or cellar them. The loss in and around Lauder often runs as high as fifty per cent on outdoor-wintered colonies.

There are some chinook winds that take off the snow in a few hours in the lower Big Horn Basin; and I understand the winters are not so severe as they are further south. The altitude of the basin is between 3500 and 4500 feet.

Boulder, Colo.

THE VALUE OF FAIRS

BY A. E. CRANDALL

I wonder how many of the beekeepers who live near cities or towns where fairs are held take advantage of the opportunity to show their product. In this way they can get in touch with the thousands of people who annually gather at these places, and who go there to see what new things are being brought out, to talk with old friends, make new ones, and to have a good time in general. The Connecticut Beekeepers' Association is doing excellent work along this line, and many are the remarks of praise for the large bee and honey exhibit which is annually placed at the "Charter Oak Fair" in Hartford.

The fair opens on Labor Day, and affords workmen an opportunity to visit the grounds and see what is going on in the agricultural line as well as in the industrial. I understand that, on the opening day, 70,000 people usually pass through the gate. Doesn't that seem like a fine chance to put bees and honey before the public?

Another thing, the fairs are educating people to realize the value of honey in making cakes, cookies, muffins, and in canning fruit. The culinary department at the Hartford fair provides for an exhibit of this kind, and the following prizes awarded will give some idea of what can be done along this line.

	PREMIUMS		
Class	1	2	3
18 Honey muffins	$4.00	$2.00	$1.00
19 Cookies and gingersnaps	4.00	2.00	1.00
20 Cake	4.00	2.00	1.00
21 Canned pickles	4.00	2.00	1.00
22 Canned fruit	4.00	2.00	1.00

Honey to be used in preparation of above, and recipe to be attached.

A good many times one can find a storekeeper who will allow an exhibit to be placed in his window. If it is done during the summer or fall months when a frame or two of bees can be shown with a printed card such as "Find the Queen," it would serve as a means of attracting attention, and get people to thinking of honey. Otherwise they would hardly give it a passing thought. A great many regard honey as a luxury, and will use it only sparingly or in case of colds. I find a good many who use honey and lemon juice for colds, and seem to think it an unfailing remedy.

Bushels of grapes grow near the hives.

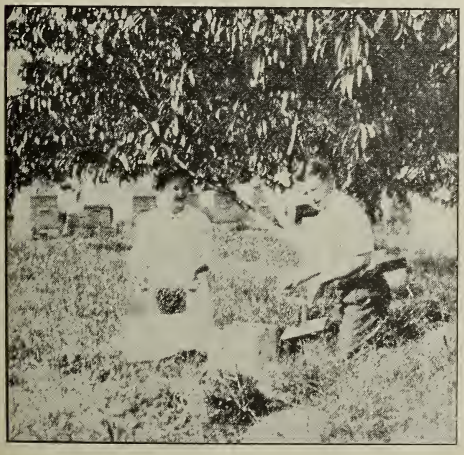
One of the illustrations shows our two children who have been sampling our favorite grape, the Worden. This reminds me that I have never seen honeybees on the blossoms of the grape, but have seen plenty of bumblebees on them. Of course the bees never puncture our grapes, and we have bushels of them growing near the hives.

Berlin, Ct.

INDIANA NOTES ON SPRAYING

BY S. H. BURTON

Dr. Miller says, on page 261, that, no matter how intelligent a fruit-grower is, he will spray before bloom is gone if he is selfish enough, unless the law prevents him. He also quotes the fruit man as saying that he can't get through spraying in time unless he begins before all blossoms are gone; that to wait till all bloom is over there is danger that some of the oldest fruit will be wormy, and that, if he sprays when two-thirds of the bloom has fallen, and kill all yet in bloom, there will still be more fruit than the trees can mature. "Me for the early spraying." Now, what reply have you?

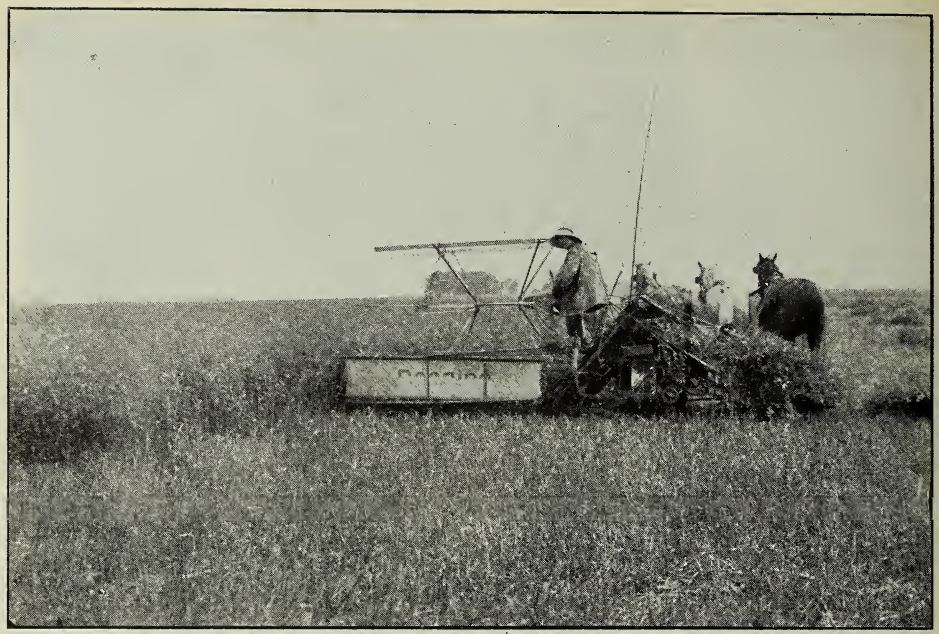


The second Crandall generation is as interested in bees as the first.

Well, the doctor seems to put us fruit-growers all in the same class; but I for one plead "not guilty" to the above charge.

A fruit-grower who has given the matter careful and scientific study does not proceed with such feverish haste. A study of the life history of the codling moth reveals the fact that the eggs from which the larvæ develop, that cause the wormy apple, are laid on the leaves and twigs near the young fruit, and not in the blossom end of the apple, as supposed by a great many fruit-growers. Upon emerging they commence to feed at once upon the young leaves, and gradually make their way to the fruit. If arsenate of lead is applied just after the leaf-buds burst, but before the blossom-buds open, it will control 95 per cent of the codling-moth trouble, because the young worm gets its dose on the poisoned leaf before reaching the apple.

Too much emphasis has been laid on the after-blossom spray, and not enough on the importance of getting the worm before the



Cutting sweet clover with a binder preparatory to thrashing.

apple is born. I have sprayed apples two weeks after the petals had fallen that were given the cluster-bud spray, and no difference was noted in the percentage of wormy fruit from trees that were sprayed when two-thirds of the petals had fallen. If an orchardist can afford to spray and kill one-third of the bloom, and then have more fruit left than the tree can mature, why all this haste in applying this spray? His statement doesn't bear weight. It would be just as well to let the worms have this extra one-third which will drop off, avoid killing the bees, and save all this ripping around, trying to get the calyx cup full of poison before it closes. The fruit-grower should learn to "make haste slowly," and give more thought to just why certain operations are necessary instead of following blindly some set rule. In my opinion the cluster-bud spray, or the spray just before the blossoms burst, is worth far more in the control of codling moth and scab than any subsequent spray that can be applied.

Washington, Ind.

TWELVE HUNDRED ACRES OF SWEET CLOVER

BY K. E. HAWKINS

Over 1200 acres of sweet clover within a few miles along one road is the way Illinois farmers are responding to the work of the university and beekeepers here, who are spreading the good news around as to the value of sweet clover. This field, for it is nearly all in one field, is owned by W. P. Graham, Rochelle, Illinois; and during the past season county agricultural advisers from all over the state have organized auto trips to Rochelle to allow the farmers of Illinois to see what Graham is doing with sweet clover.

Here yields of as high as ten bushels of seed to the acre have been known. Here the clover pastures three head of cattle to the acre instead of the usual "head to the acre" of the Illinois farmer. Used for pasture, raised for seed, cut for silage, and planted to tone up the soil, clover has come into its own in this portion of the Prairie State.

Together with dozens of other farmers from this county I went to Rochelle this summer with our county soil adviser just to see these 1200 acres of clover to make sure it was a reality. A few years ago the av-

Cattle, three head to the acre, grazing on sweet clover.

erage farmer in Illinois laughed at alfalfa, not to speak of sweet clover. To-day there are hundreds of acres planted.

Mr. Graham's primary object in using the sweet clover is that it is a still better renovator of the soil than alfalfa. Beekeepers, take notice of that. When asked if he used it for grazing or seed primarily, Mr. Graham answered in the negative, saying, "Neither. I prefer it for fertilizing." Comparative tests made there in Rochelle have shown that the sweet clover, at least on that soil, renovates better, and makes the soil give greater yields of corn and potatoes following it than alfalfa.

Often it is not necessary to inoculate the soil. Where it is necessary, one may go to the roadside where sweet clover is growing, gather some of the soil from about the roots, and, after moistening the seed with a thin solution of commercial glue, sprinkle a few handfuls of the soil to the peck of seed and mix it well. The seed must be spread out carefully to allow thorough drying, else it will spoil.

When asked if he had ever had any trouble getting cattle to eat the clover, or any bad after-effects, he said he had not. The first year it may be grazed successfully, and the second, cut for the seed. It is best planted in the fall, say August. It should get enough growth in the fall rains to be six inches high for winter. Straw spread lightly over the fields aids the wintering. Three head to the acre of cattle, as the picture shows, have been pastured there this year.

It is cut while young and tender, in the fall of the first year, and put into silos just as young and tender corn, and fed through the cold winter months just as ordinary silage. Mr. Graham says it makes very good silage. Limestone on acid soils is a necessity to get it growing, for, like alfalfa, sweet clover will not grow on a "sour" soil. The richer the land the better growth it makes, but it is unexcelled as a renovator. The picture shows the ordinary oat-binder being used to cut the clover, which is handled in much the same way as ordinary mammoth clover for hulling.

Mr. Graham has never kept any bees, for there are so many in the neighborhood that he believes there are enough to insure all the necessary fertilization of the blossoms. Not being a beekeeper, he had never noticed particularly that the bees worked on it, and this shows that necessity often makes one notice that which he may never have known existed. However, the yields of honey which are secured by some of the beekeepers around there point to the fact that the bees visit the blossoms very much, and are more of a necessity than Mr. Graham had thought. It is conjectured that the wind fertilizes to a great extent where so many acres stand side by side, as in the case of corn, while solitary plants along the roadside would not bear seed unless visited by bees continually.

Plainfield, Ill.

OFF YEARS IN SWEET-CLOVER NECTAR

BY VIRGIL WEAVER

Sweet clover is a great honey-plant under favorable conditions. It will yield as fast as almost any of the clovers, but it will not provide nectar every year. I was led to believe that this was the case, so in 1913 I shipped 131 colonies of bees to Pendleton County on the first of July. Pendleton County beekeepers told me that the last of June and the first half of July is the best time for white sweet clover. The result was that they never stored a pound of honey, and had to be fed through August and September. Out of the 131 colonies, 28 of them wintered.

As the 1913 drouth killed all prospects for white clover for 1914 in Madison County (where I formerly lived) I shipped all my bees in Pendleton County for 1914. Here is the result. Until May the rain was plentiful, May 8 giving one inch. By May 15 the yellow was in full bloom, and by June 1 the bloom was gone and not a pound of honey had been gathered. From June 1 to 6 we had 2¼ inches of rain on the eastern side of the county, and from 2¼ to 7 inches on the west side of the county—a regular soaker. White sweet clover was in full bloom by June 15.

The record of the colony on scales will tell the result better than I can. Here is what it says:

May 20, weight 58½ lbs.; July 10, 63¾ lbs. This was a No. 1 colony. I got through the season without any feeding. Buckberry did the work and not sweet clover. Buckberry gave us a slow honey-flow from Aug. 1 to September 15, ample for the need of the bees.

Sweet clover is one of the very best forage plants, and provides wonderful pasturage and excellent hay. Its value as a soil renovator is unequaled. This county of Pendleton fifteen years ago was a barren waste. It had been "tobaccoed" to death. By some means this plant became introduced, and for long it was fought as a weed. Finally the farmers began to realize its value, and, to make a long story short, land which was worth from five to ten dollars per acre at that time is now realizing from forty to sixty dollars per acre. There is another comparison. At that time the farmers were abandoning their farms and seeking employment in the cities. They did not have sufficient means to buy suitable clothing for themselves. At present there is on deposit in the various banks of Pendleton County money aggregating over $100 per capita, most of which belongs to the farmers.

But don't get it into your head that sweet clover does not have to have moisture to make it yield honey. I believe that about one year in three it will yield a good lot of honey. This will help out white clover here, as that yields about one year in three also. So the two together make a good team.

Alsike clover is the surest yielder of honey of all the clovers. I saw this demonstrated this year. Fifty colonies of bees in reach of fifty acres of alsike stored thirty sections per colony, while those in reach of a larger area of sweet clover stored nothing. It takes two years to work the combination on honey production, one year to grow the plants, one year to grow the seed. We are hoping for something better this year; so, come down and see us.

Falmouth, Ky.

SOME SEED PROBLEMS OF SWEET CLOVER.

[Can sweet clover be gotten rid of after a crop has been grown, and small grains sown the next year? This is a question which has worried farmers wherever the plant is being introduced. One reported that he had planted wheat the spring following a crop of sweet clover in the same field, and that the clover had choked out the wheat. The experience is unusual, to say the least.

The best crop to put in immediately following sweet clover is corn. The effect of the sweet clover will be noticed only in increased growth of the corn, sometimes as much as twenty bushels heavier than in land not previously planted in corn. Sometimes corn is grown two years in succession, and then followed by wheat. No trouble with smothering is ever reported. The farmer need fear no difficulty in getting rid of sweet clover after he has once sown it. The fact that the plant grows abundantly along the roadsides, and seldom appears in cultivated fields, is evidence that it can be easily destroyed if necessary.

Another point on which there is question is the amount of sweet-clover seed to be mixed with oats in seeding them together. Some sow ten pounds to the acre, others as much as twenty. A good average is fifteen. Care must be taken in mixing the seed in the drill, and in not having so much in at once that the clover will work down under the oats in the drill-box. This would mean uneven proportions in the field. With care the seeding can be made even. Hulled sweet clover is more satisfactory in such a mixture, since some of the unhulled is not likely to come up the first year.—ED.]

THE ALEXANDER METHOD IN A CLOVER LOCATION; SOME FURTHER PARTICULARS AND A REPLY TO DR. MILLER

BY IONA FOWLS

In Stray Straws, April 1, 1915, Dr. C. C. Miller seems surprised at my statement that the swarming tendency would very rapidly develop into a mania if we put the queenless colony right on top with nothing but the honey-board between; and he thinks Mr. Alexander and himself would have discovered it if that were true. He then asks, "What can make the difference?" Well, the difference is that Alexander's queenless colony and our queenless colony are under quite different conditions. He took bees that had not begun swarming. Ours may be at quite an advanced stage.

Mr. Alexander's plan, according to his own words, was to be put in operation "when your colonies are nearly full enough to swarm naturally." And later he says, "I find that nearly all who have made a failure of the method have taken colonies that had already made some preparation for swarming by having eggs or larvæ in their queen-cells." Now, our plan is applied at the very stage that he considers liable to cause failure under his method. In fact, we even take bees that have *capped queen-cells* present; and, please notice, we leave all the cells except the capped ones. Moreover, his queenless colony is left but five days, while ours is left seven or eight. Therefore his queen-cells would have larvæ no more than one or two days old, while ours might be ready to hatch. And yet I notice that, in dealing with these bees that have not even begun raising cells, Mr. Alexander says, "Leave them in this way five days, then . . destroy any larvæ you may find in the queen-cells . . . . for they frequently start the rearing of queens above the excluder. If so, you had better separate them at once."

Why separate them "at once"? Because he knew that some of the cell-builders, if placed so close to the lower hive that only a honey-board intervened, would very likely pass through into the lower hive and also start cells there, and thus the swarming idea would become firmly fixed. Well, if he recognized such a danger when cells were but five days old, how much safety would he have felt with cells at all stages from one to sixteen days old?

Our idea is to get those cell-builders further away from the queen, so that the bees of the lower story will not begin raising cells; for our experience has been that, with such advanced cells above, the lower colony will very soon catch the swarming fever unless the two stories are separated by inserting supers; and the further the brood is isolated from the queen, the more queenless the bees of the upper story seem to feel, and the less likely is it that the presence of cells above will cause swarming to be started below. Consequently we put two or three supers between; and we find, so far as isolation is concerned, it has about the same effect as moving the upper story to a new stand. However, it is vastly better, for we not only keep the bees at work, but also save the larvæ.

Evidently, in the March 15th number I did not make myself very clear, for I had no idea of criticising the Alexander method. If one desires increase, and has his bees all in one apiary, as Alexander had, it would probably be difficult to find a better plan than his. But for the sake of those who have several outyards, and also wish to keep down the increase, I thought I would like to clear up any points that might arise concerning a plan that has proved so helpful for us.

Father could not remember where he first obtained the idea of the plan. Imagine my surprise this morning when I finally located the suggestion in the first paragraph of an article entitled, "Do Queen-cells above a Comb-honey Super Bring on Swarming?" by Dr. C. C. Miller, Aug. 15, 1911; and to think that Dr. Miller is to blame for it! Well, never mind. The plan works out beautifully, and we are just as much obliged for it as though he had written it for our special benefit.

Oberlin, Ohio.

NEW BRUNSWICK CONVENTION

BY H. B. DUROST

A meeting of the directors of the New Brunswick Beekeepers' Association at Fredericton on March 9 was marked by a good attendance, interest, and enthusiasm. A number of most important subjects, bearing directly on the interests of those keeping bees in the province, were dealt with in a businesslike manner.

The subject of a law to prevent the introduction and spread of contagious bee diseases was thoroughly discussed. All were agreed that the time was ripe for the beekeepers of the province to ask for such a law; and it was finally decided that the association petition the legislature, now in session, to take action in the matter. In view of the fact that the province is practically free from the dread disease "foul brood," it was felt that a law to prevent its introduction would best suit our needs.

It was finally agreed that a law be asked for, modeled after that of Ontario, with a clause such as is found in the British Columbia act to give the Minister of Agriculture power to order bees coming into the province on their comb to be placed in quarantine for a fixed period. It was stated that the disease probably did exist in the province at a few isolated points. In order to prevent its spread, and to find and stamp it out if it did exist, it was decided that a clause should be inserted in the law to prohibit transportation companies from carrying bees on their combs from point to point in the province, except such as bore an inspector's certificate of recent inspection.

It has been recognized that one of the greatest drawbacks to an increased interest in beekeeping in this province was a lack of easy access to a source of good beekeepers' supplies. Last season the association handled supplies at cost for its members through its secretary. Objection to this was raised, so a new plan was adopted. This season the county secretaries or directors have been authorized to collect and forward to the president all orders for supplies from all members in their respective counties. The president will combine these orders and forward them to the supply concern offering greatest inducements. The goods will be shipped direct to the parties ordering.

The matters of exhibition prize lists, markets, etc., were briefly discussed, and the meeting adjourned.

Woodstock, N. B.

NOTES FROM GERMANY

BY J. A. HEBERLE, B.S.

Dr. U. Kramer, a well-known author on apiculture, and one of the eminent beekeepers of Europe, died at the age of 70, on Aug. 19, at his home in Zurich. Since 1881 he has been one of the directors, and for nearly twenty years the president, of the Association of Swiss Bee-friends. Under his management, with able assistance, the association has prospered, and is probably the most perfect organization beekeepers have in any land. The association has a very ably edited bee-journal, an insurance against damages by foul brood, and a good working system of controlling the honey of such members as desire to avail themselves of it. This controlled honey is sold as "checked," the purchaser having the best assurance that he gets pure honey. Queen-rearing, select breeding to improve the native race (the black German bee), mating stations, etc., are largely due to the initiative and fostering care of Dr. U. Kramer. He succeeded in uniting and inspiring under his supervision a large number of well-trained breeders who have attracted the attention and approval of the German-speaking beekeepers of Europe. The association of German-speaking beekeepers of Switzerland is a living monument to Dr. Kramer, its former president.

POISONOUS HONEY.

The honey gathered by the bumblebee should not be eaten, because these insects gather nectar from the poisonous *Aconitum*. Xenophon relates that his soldiers were poisoned by eating honey near Trapezund. According to investigations it is believed that the *Rhododendron ponticum* and the *Rh. flavum*, which are diligently visited by the honeybee, furnished the honey for Xenophon's soldiers. In the deserts of Uruguay the French botanist Saint Hilaire had a rather dangerous experience. On one of his excursions he found a wasp-nest on a low bush. He considered it an excellent addition to his breakfast. Very soon he and his two attendants noticed the poisonous effects. First he felt a severe pain in the stomach; then illusions troubled him. Tears ran from his eyes, succeeded by laughing-spells almost to exhaustion. Finally his sight failed him, and he thought his end was near. Two companions who came upon them toward evening succeeded in bringing him to consciousness by infusing with warm water. The next day an Indian who ate honey from a nest of the same variety of wasp, the *Lacheguana*, suffered no inconvenience at all. Probably these wasps had gathered only from non-poisonous plants.—*Kosmos*, Stuttgart.

HEATHER—ERICA VULGARIS.

This plant is in northern Germany quite important for the beekeepers. Extensive

areas are covered almost exclusively with this plant, which opens its blossoms in the first part of August. Beekeepers migrate to the heath lands from considerable distances. Entire trains loaded only with bees to be carried to these late-blooming pastures may be seen. The "Heidimkers" have from the common German black bee bred a variety called the heath-bee that differs from the original especially in its fertility and swarm impulse. In this respect it equals the Carniolan bee. Beekeepers who move to the heath want to increase as much as possible by natural swarming, and to have a high number of skeps when moving to the heath. About the middle of September the flow from the heath stops. Those skeps that the beekeeper does not want to winter are "drummed off," and the "swarms," weighing from 4 to 6 lbs., are sold from 75 cts. to $1.10. For 12½ cts. a swarm up to 11 lbs. can be sent by mail to any part in Germany. Such swarms are put on combs, and fed sugar syrup for winter stores. The queens of such swarms are often exchanged, either in the fall or next spring. The honey from the heather is not considered first-class; and as soon as it is capped it is so viscous that it cannot be extracted except by using a new device by which, after the comb is uncapped, something like a blunt nail is forced into each cell. Most of the heath honey is either sold as comb or chunk honey, or strained honey that has been melted with a gentle heat. It is only in the last few years that the modern hive has begun to gain favor with the Heidimker.

Besides this *Erica vulgaris,* there grows especially abundant in Karnten and Carniola the *Erica carnea* on the lower mountain sides. It blooms quite early in spring, when snow may be within a few feet. This very beautiful flower, which covers extensive areas like a crimson carpet, furnishes pollen and honey. The honey is said to be of very fine quality, but is used by the bees to build up.

I am surprised that I never see any thing mentioned about the heaths of America. Are there none in the northern or northeastern parts? The *Erica vulgaris* grows in Germany on peat and sandy ground. The heath honey is by many considered a poor winter food, but excellent in spring to breed up rapidly.

Kempten, Bavaria, Germany.

DR. ULRICH KRAMER

BY ERNEST TSCHUDIN

The Swiss beekeepers have suffered a severe loss by the death of Dr. U. Kramer, which occurred in Zurich on the 19th of August, last year, a few days before his 70th birthday. His name is known not only in every Swiss beekeeper's home, but also far abroad, on account of his practical and scientific writings on the honeybee. He had been a lover of nature since his earliest days, and especially the bee captured his interest. While still in the state's service as teacher at the public schools at Zurich he unselfishly sacrificed most of his holidays to the cause of beekeeping, giving during this time more than 200 lectures on beekeeping, and dozens of instruction courses of several days each, all of which practically meant unpaid work in those days. Since 1895, when pensioned as teacher, he devoted all his time and strength to the promotion of beekeeping in Switzerland.

Kramer was founder of the Zurich Beekeepers' Association, 1887, and three years later he advocated the uniting of the different beekeepers' societies into a national organization, which now counts about 9500 members, belonging to 116 individual societies. Kramer had been its president for nearly twenty years. In the same year, 1884, he initiated the observation stations for studying weather and yield conditions in different regions of the country, reports to be sent in monthly. For twenty-two years Kramer acted as chief of this work, and published highly interesting reports with colored tables, which threw new light on the matter.

In the last fifteen years this institution has been also adopted in Austria and a few German states, as well as the mating-station system, another creation of Kramer. He established the first station of this kind on a small island in the lake of Zurich.

With the advance of beekeeping in the last twenty years the importation of foreign stock, especially Italian and Carniolan, had assumed great proportions. The results, however, were not always satisfactory, and Kramer, basing his statements on careful and painstaking observations, was one of the first to declare that the native "brown" bee was the race best adapted to the pecu-

DR. H. C. ULRICH KRAMER

liar climatic and other conditions of the country. At the same time he started the "pure-breeding courses," which took place yearly, and were usually attended by about a hundred beekeepers. One of his best-known writings deals with this matter (*Die Rassenzucht*). The facts prove that Kramer's idea was correct. The select Swiss bee of to-day represents an excellent strain.

But Kramer was also gifted with a practical turn of mind. When, in view of the increased production, many a beekeeper was afraid that the product would go down to an unsatisfactory price, Kramer showed the way—the honey control (introduced in 1897, and directed by himself for several years) in connection with an active propaganda based on the controlled pure product. The public now usually asks for controlled honey, the purity and quality of which is warranted by the Beekeepers' Union.

As a regular contributor to the *Swiss Beekeepers' Review,* and for many years director of the bee department in the *Agricultural Journal,* and by publishing several works, partly in connection with other authorities, he had sown many a grain of wisdom that brought forth fruit. No wonder that, on various occasions, he was honored with diplomas and other distinctions, and in 1908 even a doctorate (*honoris causa*) was conferred upon him by the University of Bern in consideration of his scientific and practical merits in apiculture—the first similar honor since the days of Dzierzon.

These few notes will suffice to show the great debt of gratitude the Swiss beekeepers owe to Dr. Kramer. It seems unnecessary to say that he was a good man, a straight character, with an ideal disposition, and in his life he fully realized one of his expressions: "A right man must leave a good trace of his activity in this world."

Basel, Switzerland.

WHAT HAPPENED TO THE QUEEN; SOME DIARY NOTES

BY J. P. BRUMFIELD

All queens were clipped during the fruit bloom of 1913.

March 13, 1914: "All queens clipped in the latter part of January started up a little brood, but they have been pretty steady until now."

March 15, 1914: "I gave some partly filled combs of honey to some light ones and noticed some with a patch of sealed brood and some with recent eggs and larvæ. All the colonies in the yard have some brood."

April 15, 1914: "There is a colony that has no brood. I am not certain whether they have a queen. I did not find her when clipping (fruit bloom)."

April 16, 1914: "I found an unclipped queen in the colony, but she does not lay. I put a frame of eggs and larvæ in, thinking it would make her show her hand, but did not clip her."

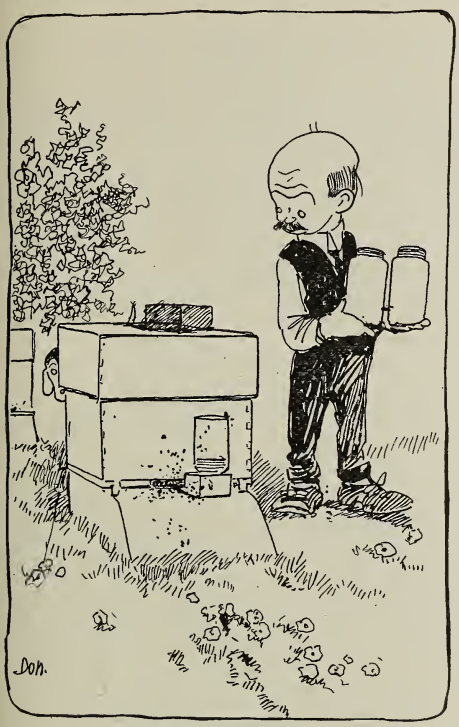
April 22, 1914: "The queen is laying. There are drones flying in the yard."

April 29, 1914: "Her brood turned out to be drone. I united the colony by setting it on top of another hive."

My explanation is that about March 15 the colony lost their queen, probably by balling on account of an early disturbance. I have had this happen so often that I have resolved never to disturb a colony again before fruit bloom. The bees then raised a queen, and, on account of unfavorable conditions or lack of drones, she did not get fertile at so early a date.

Galena, Kan.

Heads of Grain from Different Fields



The Backlot Buzzer

You can teach a calf to drink from a bucket, but after a bee once gets educated to it, it sticks to the nursing bottle.

Yellow Wax from Bitterweed

The article by P. E. Waugh, p. 939, Dec. 1, on bees secreting yellow wax, and F. W. L. Sladen's comments upon it, brings to mind some observations in my own experience in Texas several years ago.

There is a plant, very common all over the northeastern part of the state, known locally as dog-fennel, or bitterweed. Some seasons it secretes a considerable quantity of nectar which, however, is of such a very strong and bitter flavor that bees do not pay much attention to it if any other source is available. This plant thrives best on light sandy soils, and is in the prime of bloom during July and August, when the scorching sun and drouths of summer have ended the flow from most other plants.

Strong colonies will often store 40 to 50 lbs. of the rich golden-yellow honey; and comb built at this time is invariably yellow—just a little lighter colored than the ripe honey—and is clear and transparent. I know the color is not caused by pollen grains, for the pollen from dog-fennel is of a dull-red color. The new comb also has a slightly bitter taste, and I have often wondered if the very bitter honey consumed by the bees while secreting this wax could have imparted somewhat of the same flavor to it.

Down on the Texas coast we often got a considerable flow from goldenrod; and when heavy enough for comb-building I have noticed that it was always yellow. I am not sure that the color, in this case, was not caused by pollen, as it is of the same color.

Port Columbia, Wash. J. D. YANCEY.

How to Form Nuclei and Keep the Bees from Returning to the Old Stand.

The only way that I can make increase here and secure a honey crop is by forming two-frame nuclei. As you know, it is necessary to confine these nuclei for three days, else the flying bees will go back to the mother colony. Here is where my trouble comes in confining them. I have no shade for my bees, so I was afraid to close the hive entirely, so I accordingly left a hole half an inch square, over which I placed a piece of wire cloth. There were only two frames of brood and bees in a ten-frame hive-body. They struggled so hard to get out that they died by the handfuls. Then I tried giving them the full entrance, ⅞ inch by the width of the hive, closing this with wire cloth, but it was no better. I sprinkled them with water, but it didn't do any good. There has to be some way to confine them or they could not be confined in cages and shipped as they are.

If you can give me any solution to the problem I shall greatly appreciate it. I have been thinking of putting them down cellar where it is cool and dark. Do you think it would be all right? and in that case how large an opening would you leave at the entrance?

I have been letting these nuclei raise their own queens; but this year I want to raise some queens and give them when I divide. I have never had any experience in queen-rearing; but I think I can do it all right. I want to use a modification of the divided brood-nest. Instead of using two perforated zinc division-boards, dividing the hive into three apartments, my plan is to use only one and divide the hive into two equal apartments and shut the queen in one side for ten days, and at the end of that time remove the cells from the queenless part and transfer the queen to that side, and let them raise cells in the other side, and so on as long as I need queens. What I want to know is, will the bees in the queenless side of the brood-chamber build cells of their own accord on the combs, or shall I have to graft and use artificial cell cups to get them to build? In confining the queen in this way to one side of the hive is it necessary to have perforated zinc over the entrance? If there isn't, will she not go to the entrance and get around the division-board and into the other side of the hive?

Would it be best to give a ripe cell to the above nuclei, or a virgin? and ought it to be given at the time the division is made, or wait till after the bees are liberated and quieted down?

In fumigating combs with sulphur, should it be put under the combs or on top? Will the fumes of the sulphur or carbon bisulphide injure comb honey? It is almost impossible for us to keep comb honey here in hot weather without worms getting into it.

Heiskell, Tenn., March 23. J. R. STEDMAN.

[You will get the best results by making nuclei of sealed and hatching brood. The more brood that is just ready to come out, the better. Also shake into the nucleus box or hive nearly double as many bees as you expect to leave with it, getting as many young bees as possible. It is immaterial whether the nucleus has a queen-cell or a virgin queen, excepting that, where a queen is present, the bees will stay a little better than if queenless; also gains will be more rapid if there is a queen there to lay eggs. When the nucleus is prepared, simply put it on a new stand and close down the entrance, so that only two or three bees can pass through at a time; and as a precaution to get the bees to mark their entrance, throw a handful of weeds or straw loosely over it. Most of the old field bees will return to

the original stand; but if you are careful to shake into the nucleus, as advised, more bees than are needed, and have considerable hatching and sealed brood, you will have a nucleus that will build up rapidly. It is never a good plan to close the entrance of a hive, especially in warm weather.

Under normal conditions, with the honey-flow on and a strong colony, the plan of dividing the hive with a tight-fitting queen-excluder board is a good one for raising a few queens. The bees should start queen-cells of themselves. However, if there is no honey-flow on you will not get good results in any plan of queen-rearing unless you feed. It is not necessary to have perforated zinc for the entrance, as the queen never leaves the hive except in the case of swarming, and will not go outside of the hive to get around the division-board.

Carbon bisulphide is much better for fumigating combs than sulphur fumes. Sulphur will sometimes spoil comb honey, and is not nearly as effective as carbon. To use the latter, stack your supers of comb honey up in your work-shop. See to it that the bottom and the cracks between the supers are as nearly air-tight as possible. This can be done by pasting strips of paper around the cracks. Place an empty super on top of all, and in it an empty saucer or tin lid. Put in this receptacle about a teaspoonful of carbon bisulphide for every ten supers of honey. The gases are heavier than air, and will settle down through the supers. When fumigating with sulphur it must be placed *under* the supers instead of on top, as the gases will rise.—G. H. R.]

Fruit-jar a Successful Feeder

I believe I have a better method of feeding than I have yet heard of, although it is on the pepper-box order. Simply take a Mason jar—pint, quart, or half-gallon, according to the amount to be fed. Next take a lid, one that is of no use for sealing fruit any more. Break out the glass on the inside, and puncture the lid from the inside with a few very small holes and the job is done.

This feeder can be used the year round. I am using one now. The can will make the hole air-tight when I invert it, providing I have done a good job in boring. One can use this system regardless of the hive level. I use a small block of wood to cover the hole when it is not in use. The bees will glue it fast and make it air-tight.

In making this place for the feeder, take an extension bit, and set it so it will bore a hole just large enough for the can lid to come flush with the under side of the cover. I think the center of the cover is best. When this is done you have a feeder that is always at hand, and one that will never wear nor rust out.

Marion, Ind. L. W. MARTIN.

A Cheap Milk-pan for Feeding

When using ten-pound pails for feeding, as J. L. Byer suggests, page 194, why not invert them in a tin pie-plate and set in a super on top of frames with the oilcloth turned back? This will avoid spoiling the pail-covers. All that is necessary is to insert a thin bit of wood or a shingle nail under the outer edge of the pail after it is placed on the hive, and then the bees will do the rest. It will feed just as fast as the feed is taken by the bees and no faster.

I prefer, however, a cheap milk-pan that holds about twelve pounds of syrup. I put a comb-honey or extracting super on the hive after sliding the oilcloth back about half way; set the pan over the open space, and put into it a handful of excelsior. I pour in the warm syrup just before dark, and, as a rule, the pan will be dry in the morning. I remove the cover and fill again if it is necessary. This can be done in one-fourth the time required for pails. Grass can be used for floats.

Union Center, Wis. ELIAS FOX.

Carrying Bees out of the Cellar Early in the Night.

My plan for 25 years has been to carry bees from the cellar in the fore part of the night. During the latter part of the night they will cluster compactly, and in the morning they will slowly unwind this "ball," and gradually begin their cleansing flight until all have been out. When the air is filled with bees, it is one of the grandest sights of the season. I never have that mad exciting rush that I used to have when setting out in any time of daylight. There is practically no drifting, even with hives only a foot apart and entrances wide open or partially closed. So far as setting hives on the former stand is concerned to avoid mixing, there is nothing to it.

Union Center, Wis. ELIAS FOX.

Lead Pipe Dangerous

I notice, page 206, March 1, that E. B. Ault desires to use a lead spiral-worm pipe to convey steam through his honey-tank to prevent granulation or to restore the honey from its granulated state, and the editor asks if it is all right to use the lead pipe. I will state that it is not all right. The acids that are present in the best grades of honey are sufficient to set up a chemical action with the lead that will leave a lead poisoning; and when there are any acids present due to improper curing of the honey, as there are at times in a great amount in some honey, the chemical action is multiplied in proportion to the amount of acid present. I think a good grade of first-class white galvanized pipe a great deal better.

Bartlett, Tex. T. P. ROBINSON.

The Avocado Pear—More About It

The avocado, or "alligator" pear, is a great fruit, or perhaps should be classed as a vegetable, as they are eaten with a little vinegar, pepper, and salt.

At first taste very few people like them; but after tasting a few times one seems to want more and more, and doesn't seem to tire of them as with some fruits. I let them hang on the tree until they are ripe, then lay them away for two or three days, till they begin to get soft but "not too soft;" picked too green they are watery and haven't the rich nutty flavor. The first avocado I ate I sprinkled a little sugar over, and a few drops of vinegar, and soon found them very nutritious. In Havana they retail from 2 to 60 cts. each, according to size and season. In New Orleans I saw large nice ones on the market 10 to 20 cts. each.

Corning, Cal., March 2. HENRY HEAP.

Cement Hives in Florida

Mr. Culbreth, of Tampa, has had bees for years. He had a dozen cement hives made last spring, and transferred to them, hoping to have a good lasting and serviceable hive. Only one of these colonies is alive now. They say the cement hives are too damp for bees, especially in the rainy season. I should hate to handle many of them, even if bees should do well in them.

Palmetto, Fla., Nov. 5. C. H. CLUTE.

Timbers under Water 20 Years

The editor's note, p. 952, Dec. 1, in relation to preservation of wood is correct. I have removed from lead and zinc mines timbers that I knew had been placed there and had been under water 20 years, and they were as sound and green as when put there. The bark and sap looked as though they had been recently cut.

Galena, Kan. J. P. BRUMFIELD.

A. I. Root

OUR HOMES

Editor

Peace on earth, good will to men.—LUKE 2:14.
Charity suffereth long, and is kind . . . . is not easily provoked, thinketh no evil.—I. COR. 13:4, 5.

"BREATHING-SPELLS."

When I am in Medina I am a Congregationalist; when here in Bradentown, Fla., I am a Presbyterian—that is, if the good brethren here will permit me to say so. There is no Congregational church here, and I do not see much difference, although dear Bro. Rood *did* suggest one Sunday that I would "know my catechism" better if I were an "out-and-out" Presbyterian. Well, I have learned to love the Presbyterians dearly. I love that little Sunday-school paper *Forward*, and I love the *Westminster Quarterlies*. Just by accident my eye caught the clipping below from the *Adult Bible Monthly* for April:

BREATHING-SPELLS.

The United States Government has recently concluded peace treaties with more than a score of nations. Great Britain, France, Italy, Spain, and China are among the number; while Germany, Russia, Japan, Turkey, and Greece are expected to follow soon. The treaties provide that all international disputes shall be referred to a permanent commission for investigation.

The idea is that many difficulties will disappear upon careful examination, or will at least yield to adjustment. The most important arrangement of the new treaties, however, is the provision that in no case shall hostilities begin before the end of one year. If this provision is strictly observed, war will be practically impossible. A year's time to think will be enough in ordinary cases to bring about peaceful adjustments before war can begin.

These treaties have been aptly called "breathing-spell treaties," and they mark a great advance toward the permanent establishment of peace.

The principle is a very valuable one for human conduct. Men are apt to be too quick, both in speech and in action. Hasty speech brings ten thousand troubles into this world. Hasty action reaps a constant harvest of sorrow. The habit of taking time to think saves many a mistake and heartache. Many an act that has caused trouble would never have been committed if the person committing it had but taken a breathing-spell.

When shall we learn that quiet and meditation have much to do with conduct? Prayer, also, is necessary to insure careful action. Think and pray before speaking or acting. A rule such as this would make the world a new place.

Anger is a hasty feeling of the heart. It bursts out into sudden speech or unwise action. The best cure for anger is to be quiet for a time. Wait until the fire burns out. There is an old proverb that runs like this: "If you are angry, stand still. If you are still angry, sit down. If after this you still feel angry, lie down."

The "breathing-spell" will work.

May the Lord be praised for what the above tells. How fervently we ought to thank God continually that we have a Christian President when such a one is needed—yes, *more* than ever before in the history of our republic. As I write, this 6th day of April, the papers are full of the great temperance wave, not only in Ohio nor in the whole United States, but over the *whole wide world*. I fear I shall have to give up trying on these pages to give the notes of progress; for before it could reach you it would be stale news. I suppose you have all read over and over the declaration of Chancellor Lloyd George of England. He said in a speech, "We are fighting Germany, Austria, and drink; and the greatest of these three deadly foes is *drink*."

I have been much impressed during our recent Sunday-school lessons with the fact that in olden time, when God's people became disobedient and careless, he permitted ungodly nations to chastise them, even by wicked war and terrible loss of life. Well, it now begins to be made plain that this war was *permitted* because not only our nation but the nations of the world have been letting *rum* rule instead of Christianity and sober common sense. When the *whole liquor traffic* is ruled out and *down*, the war will cease. "He maketh the wrath of man to praise him."

Now let us come down a moment to "breathing-spells" for you and me, as well as breathing-spells for nations.

I have set seven hens during the past winter, and have 75 chicks, big and little. Every hen made a good hatch, and only two chicks died. I have spoken of my "tussels" with sitting hens; but I have been priding myself that I have learned by experience to "suffer long and be kind," but, alas! I think I must have forgotten what I have so often said to you along in the line of "breathing-spells." A young hen (part Leghorn and part Buttercup) had just brought off a nice brood. I was trying to teach them to eat bread and milk; but the mother got it into her head I was going to deprive her of the loved ones she had waited patiently to bring out. She flew at me in a frenzy. I coolly straightened up, but she made a dive at my foot and trousers leg, and for a moment I thought that, with beak and claws, she would tear the leg of my pants to shreds.* Let me digress. Mrs. Root had been scolding some time because I *would* wear such soiled and untidy pants when visitors, both ladies and gentlemen, faultlessly attired, were coming at all hours of the day to see *A. I. Root* and his garden and chickens. I had objected, claiming that every time I put on *new* pants something happened, and it did

* My scarred hands and wrists testified to the ability of a sitting hen along this line.

seem as if something was sure to "happen" the very first day the pants were worn. Well, dear friends, I had just donned the new pants, and this was the "happen." I gently sent her to the other side of the room, but she came back like a whirlwind, more fierce than ever. Now, I *thought* I was cool and gentle, but I am afraid I *did* say something like this: "Why, you old *heathen,* who do you think is running this ranch, any way?" I gave her a send with my foot that made her bump against the opposite wall harder than I had intended. She uttered a plaintive moan and then toppled over. In a moment she recovered and called faintly to her chicks, and then—what do you think? With one wing dragging she came at me again. About this time two things occurred to me. First, what a predicament I should be in if she *died* with a dozen motherless chicks! Second, it became apparent that she would *fight* with her last breath. It is seldom you can teach dumb animals who is "boss" by brutal kicks. They will fight as long as a bit of breath is left. May be you have tried it with a kicking cow or a balky horse, and, dear friends, *humanity* is much the same. Neighbors go to law and declare they will keep on, even if it takes the last copper they are worth. "Not by might, nor by power, but by my Spirit, saith the Lord of hosts."

Over in Europe we are now having an illustration of this great truth, on a terrible scale. How about the poor hen? She is alive and well, but she cares for her chickens with a broken wing dragging. A good deal of the time it gets between her legs, and must be very annoying. It is to me a constant lesson in regard to "breathing-spells." My friend, how would *you* like to go through life, dragging a broken wing between your feet and ankles? I must catch her and clip it off; but I dread another encounter, especially while she has the chickens.

Shall we not enforce our laws? Yes, our laws must be enforced for the good of community; but while we enforce them let us be *sure* to *pray* for the transgressor. Love ye your enemies, *do good* to them that hate you, etc.

The following, from *Farm and Fireside,* very aptly illustrates what we have been considering. Would not the same tactics close the great war now in progress?

A friend of mine bought a farm with a disputed boundary on one side. He and the owner of the other farm became acquainted, and each found the other a pretty good sort of fellow; but still that old boundary dispute stood between them. The time came for a new fence.

"Here's the line," said the old settler.

"*I* understand," said the new man, "that it is *here.*"

"No," said the other, willing to cavil on the "ninth part of a hair," "we've always claimed this strip of land, and we must insist upon it."

"Now look here," said my friend, "I've had this line surveyed, and I haven't the faintest doubt that this strip is mine, but I think too much of your friendship to quarrel about it. Mind, I claim it's mine, but what *you* say *goes.* We'll build the fence on one condition—that *you* set the stakes. I'll make you judge and jury too. Set the stakes and we'll build the fence."

The old disputant squirmed. It wasn't fair, he said, to make *him* set the stakes. If he set 'em he'd set 'em on the correct line—he'd always claimed that strip, and he always would—

"All right," said my friend, "but you'll never get it by a lawsuit with me. You set those stakes and we'll build the fence in the morning."

The quarrel was settled. The stakes were set so as to take the strip from the man who set them—he had been neatly Glendowered.

I commend Glendower's policy to line-fence and boundary disputants everywhere. It may lose you a point once in a while, but it will save you trouble and preserve your self-respect.—*Herbert Quick.*

POULTRY DEPARTMENT

GREEN STUFF FOR CHICKENS, AND CHICKENS FOR GREEN STUFF.

The above heading is what I am going to talk about mostly; but incidentally I expect to wander from my subject somewhat. Since wheat is up "out of sight" I have been asking my poultry some questions, and they have (I *think*) given me some plain answers. I have, as you may recall, been giving the fowls corn and wheat in those elevated galvanized tubs whenever they felt disposed to fly up after it. At the same time we have sprouted oats for them to dig up, and usually some other kind of green stuff about every day. Added to all this they have ground fresh bones about twice a week. Yes, there is one thing more. We keep a bin of middlings to mix up with various stuff from the kitchen; and with the small potatoes (too small to cook) boiled up and mashed with the shorts or bran. With the above "menu" we have been getting close to four dozen eggs a day from five dozen hens during March. We cut off the wheat, however, about the first of the year, and were feeling pleased to see the egg-yield keep up so well.

Well, a few days ago the hens were following me about, sometimes getting under my feet, and evidently wanting *something*

they hadn't been having. I thought it was more meat, and gave them more ground bones; but it was about the same. Then I gave a bigger allowance of the wet-up middlings, and *that* seemed to "hit the spot." When chickens have been lacking something, and finally get it, they will all go and sit down on a log, in a long row, and look satisfied and contented—at least mine do that way. To make sure it was the *wheat* they wanted, I gave them some chick feed that contained wheat, and they grabbed ravenously every bit of wheat. They had gotten *tired* of corn, and wanted their old ration. The egg-yield increased at once after they got it.

Well, I have been experimenting to find out, especially here in Florida, what we can grow to take the place of the expensive shipped-in grain. Cassava answers finely, as I have told you; but it takes a long time to grow it, and it can't be grown at all where there is much frost. I told you, whenever you set a hen, to sow some radish seed; and radish comes so quickly, and is so greedily taken by the fowls, I think just now it is one of the very *best* things, not only for growing chicks, but for laying hens as well. Mustard and turnips are too slow. I get from the Kilgore Seed Co., Plant City, Fla., an ounce of mixed radish seed for ten cents, and I wish you all could see the row of radishes from this one ounce sowed four or five weeks ago. Of course I put on a little guano; but the cost of the seed and guano, compared to the basketful after basketful of "greens" is but a trifle. Sprouted oats *is* a fine thing, and we owe a vote of thanks to Edgar Briggs for stirring up the poultry world about it, as he did, even if he did get pretty good pay for so doing. Lettuce and cabbage are both fine; but it takes ever so much longer to get a crop of either than it does of radish. Collards, a sort of cabbage grown here in the South, I am just testing, and this reminds me of a story I tell visitors.

THREE PAYING CROPS FROM THE SAME GROUND IN LESS THAN SIX MONTHS.

The strip of ground is next to the mulberry-trees, where I had my poultry-houses for perhaps three winters. In November we dug the dasheens then on the ground, and planted Triumph potatoes. These were dug and sold in February ($2.00 a bushel), and collard plants set out. These last, from the start, were a "happy surprise." Some of the plants are now (April 2) 18 inches high and 30 across. I am told that down here, on good soil, you can pull off the lower leaves as needed, and the top will keep growing year after year.

I have recently seen a statement from some good authority, I think it was the *American Poultry Journal*, that if one were to give up either meat or green stuff for his poultry he had better stick to the "greens."

Some time ago I mentioned a little creek that crosses near one corner of our five acres. Well, this creek is mostly fed by the waste from artesian wells, and, of course, takes the drainage from excessive rains. One of our neighbors, Dr. Braymer, brought some watercress roots from New York and planted in this "run" some time ago. The roots or seed finally came down stream, and this winter there is a mass of watercress almost filling the stream from bank to bank, for almost one-fourth mile with some of the stems as large as a hoe-handle. A few days ago my neighbor Rood remarked he was almost ready to give somebody $50 to clean out the stream so the water could get away during a freshet. I suggested *two things* to neighbor Rood: First, that the tremendous growth of cress was largely owing to the fertilizer that had been carried into the creek from his fields by the unusual rains of the winter. I think he has put on his 25 acres something like $1500 worth. My other suggestion was that I would take it all away, without any $50, for my 135 chickens, big and little. With all our books on poultry, why can't we have at least one on green stuff for chickens? Will not some one of our experiment stations get at it? or, better still, the Department of Agriculture, Washington, D. C.?

THE "BLIND HEN," ETC.

Now for the second part of our heading. What *breed* of chickens will take most kindly to green stuff in the place of grain? When the Brahmas first came out it was claimed they would live and lay almost without grain, if given access to a clover-field, and it is, I think, admitted that Rhode Island Reds live largely on green feed *if they can get it.* I have objected to them in place of Leghorns because it cost more to feed them; but, wait a minute. I have already mentioned a Rhode Island hen that laid big yellow eggs in November when we got here, and scarcely a Leghorn laid at all. Two years ago I bought of neighbor Rood two Reds because my Leghorns would not sit. Well, this hen is one of them. She is blind in one eye, and her egg is much darker than any other, so you see it is no trouble at all to "trap nest" her. When we got here in November she was laying two days, and then skipped a day. Soon she laid three days, and then a skip, and a little later she laid every day. As I felt sure from former experience she would soon

want to sit, I paid little attention to it; but when the blind hen laid a yellow egg day after day through December, January, February, and clear into March, without ever a "cluck," I began to "sit up and take notice." This is *her third winter,* mind you. I have set seven hens, and have 75 strong and healthy chickens, and every setting had more or less yellow eggs from the blind hen. Some good authority has said there may be a lot of great layers scattered over the land, but the owner *doesn't know it.* She happened to lay a different egg, and be blind in one eye. I give here a clipping from *Farm and Fireside:*

LEARN TO DIAGNOSE HUNGER.

Lowering the cost of keeping chickens is not given half the attention it should receive. The majority of chicken-owners think their birds need grain when they act hungry and restless. The first move is to throw a lot more of expensive grain to allay the restlessness of the hens. In most cases what the birds are asking for is green, succulent, bulky food, fresh water, grit, and animal food or bone.

The heavier breeds in particular would be much better off in vigor and productiveness in many cases if half of the costly grain were replaced with a good quality of cut or ground clover or alfalfa hay, some roots, cabbage, apples, potatoes, or silage. By such a change of feeding costs can be reduced.—B. F. W. THORPE.

Over and over again, where you read of remarkable success with chickens you find it was made by being right with the fowls, and making a careful study of the whole matter. The clipping above hits it exactly.

DWARF ESSEX RAPE.

Some time ago, while "down East," I visited a poultrykeeper who had his fowls in a yard full of rape two feet high or more. He wanted to show us a $50 hen; but she kept hiding in the luxuriant rape, so it was almost impossible to get a sight of her. Now, this is the ideal condition. Have your rape-patch large enough, or your flock of chickens small enough, so they won't eat the rape all off clean in a day or two. I have a small enclosure full of rape now that pleases me; but if I were to let the whole 135 in it at once I fear there would not be a green leaf by night. What can we grow that will take care of itself like weeds, almost or quite without cultivation or fertilization, and that the chickens will eat? There is waste land, more or less, almost everywhere (as well as down here in Florida) doing no good to anybody or anything. Mulberries fill the bill pretty well; but they are not "greens."

P. S.—Whoever writes that book on "Greens for Chickens" should keep in mind we don't *want* a book at a big price with very little real "greens."

FETERITA: MORE ABOUT IT AS A SUBSTITUTE FOR WHEAT.

As I haven't seen any thing in High-pressure Gardening about feterita I thought you would like to test it in Florida. I am sending you a sample under separate cover. Plant 12 to 18 inches apart in the row. I think it is a great chicken feed, and it makes heads in Kansas without rain.

Concordia, Kan. LEWIS EELLS.

P. S.—We think feterita good boiled, and eaten with cream.

The "P. S." is the "big thing" about the above letter. Having some of the grain on hand, we boiled it in a farina-boiler, and Mrs. Root and I as well as the neighbors were "happily surprised" to find it a really delicious, nourishing food, even better than the dishes made from the flour. Now, here is the great point: Grow it in your garden; put the heads of ripe grain in a bag (I have just done it), thrash, and cook. Can any "shorter cut" be made "from producer to consumer"?

ON THE BOOKSHELF

The Country Home Month by Month. —Edward Irving Farrington. Laird & Lee, Inc., Chicago, $2.00.

One of those wholesome, readily understood manuals of country living is this new work by Mr. Farrington, sometime editor of *Suburban Life,* and a writer on general rural subjects. Beekeeping justly claims its share of his attention in a series of reminders, month by month, of what to do in the apiary—in May, prevention of swarming; in October, preparation for winter. "No country home is complete without a colony or two" is a broad statement, but one of which the backlotter and farm beekeeper will realize the truth.

For the general farmer who wants suggestions for beginning beekeeping along with his monthly hints on farming, gardening, and stock raising, this work is designed. "With painful recollections of the many occasions on which the author has remembered things to be done just too late to do them, this book has been written with an intent to help others in doing the right thing at the right time." Not a treatise on beekeeping, it would not instruct a specialist in beekeeping in anything he does not know already. The notes on apiculture are orthodox, however, Mr. Farrington being a member of the craft himself.